

FEBRUARY 1995

**New Column:  
Networking PCs**

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# HP Professional

GRAPHICAL  
USER INTERFACES

## *Mastering* *The* Art

**Build The Renaissance GUI With  
A Neoclassical Approach To Interface Design**

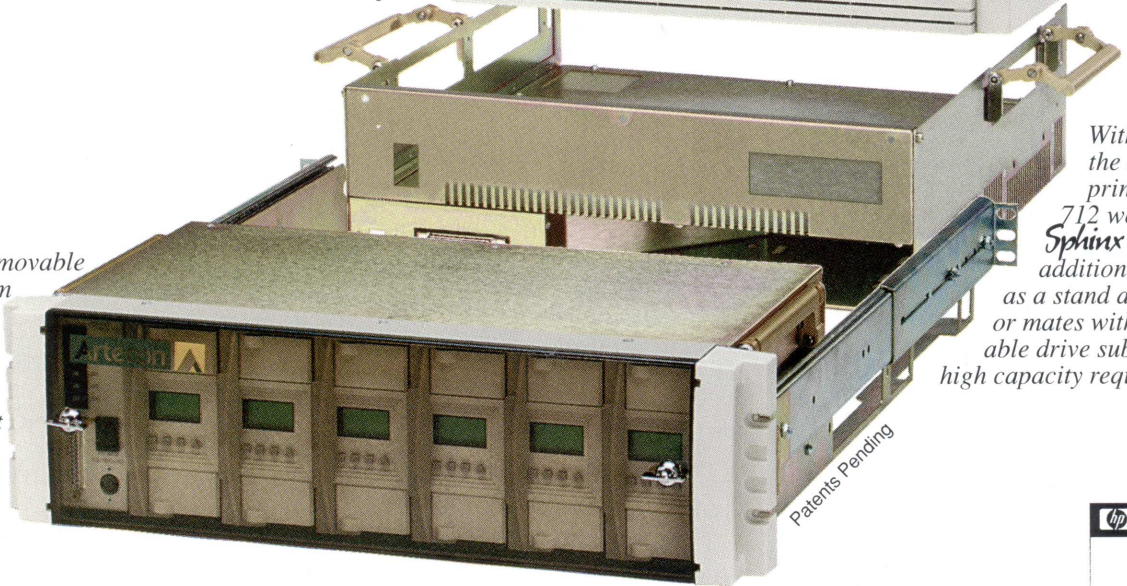


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*Rackmounting an off-the-shelf  
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*An optional removable  
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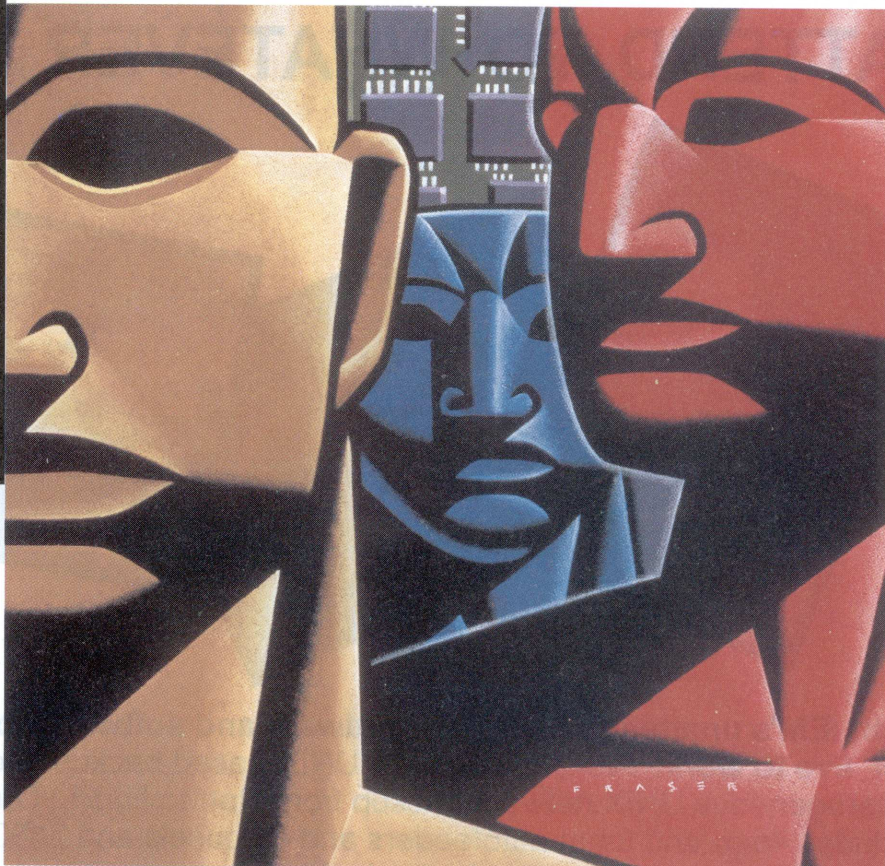
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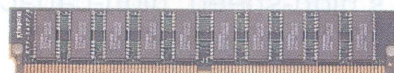
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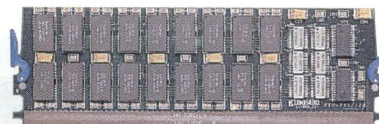
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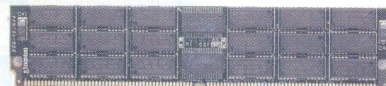
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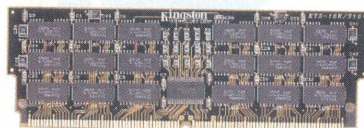
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*Paint alone doesn't make a work of art. It takes imagination and a skillful technique. In this article, you'll find that building a GUI demands the same perspective and attention to detail that it takes to create a masterpiece.*

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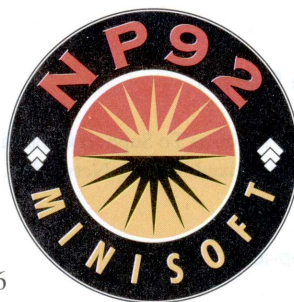
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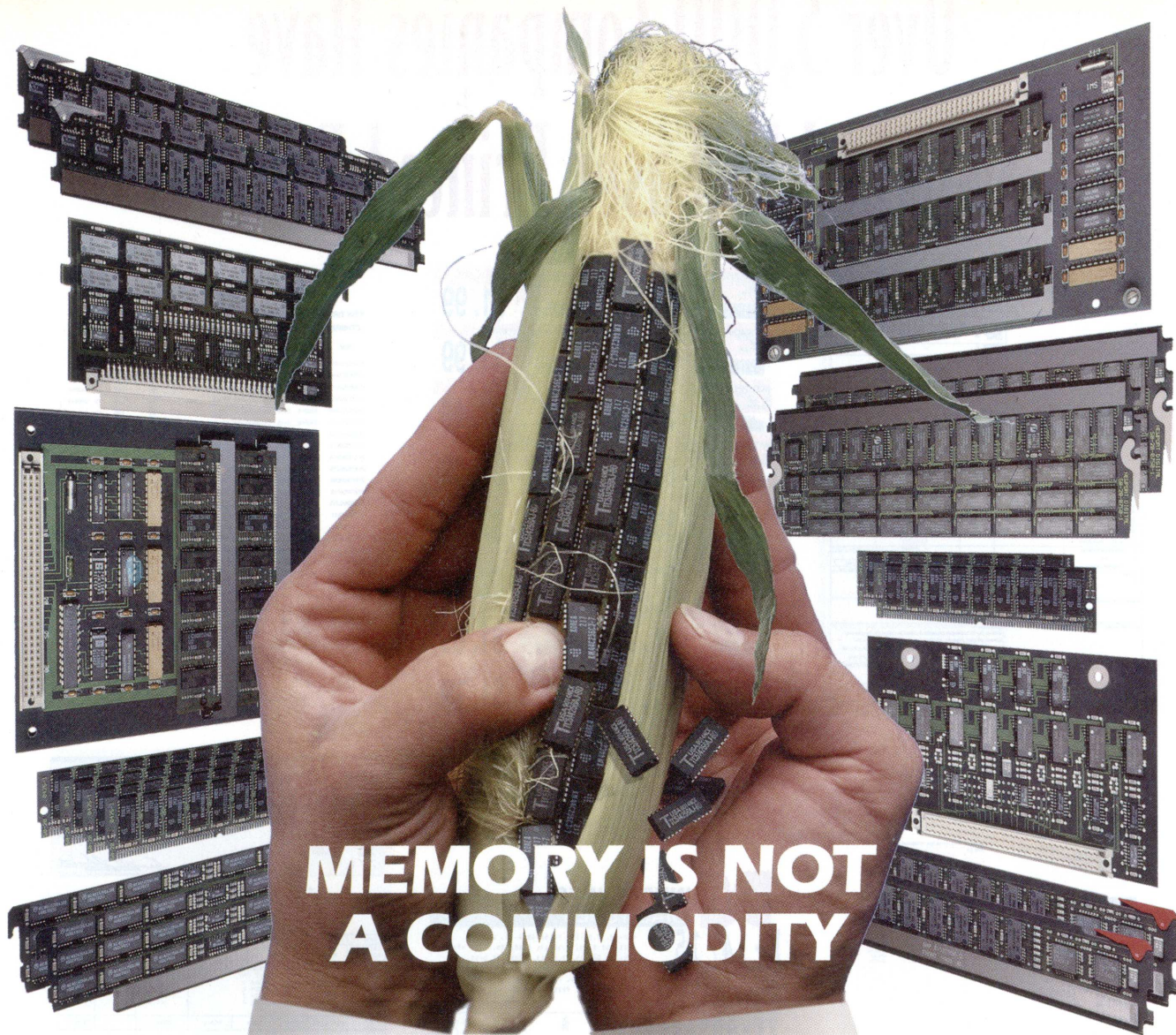
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# The Lava Man Cometh

As usual, I find myself alone on deadline night, basking in the warm gray glow of my 19-inch X terminal that doubles as a picture frame, wondering what to write about. And as usual, HP didn't disappoint me. At the eleventh hour, HP provided the fodder for this month's editorial. No, it's not a new server and not a corporate merger; it's not a new RISC technology and Glenn Osaka hasn't been promoted again. No, it's just a goofy picture of a guy playing hopscotch over a lava flow.

And guaranteed, HP won't disappoint you with this, their latest global advertising campaign aimed at the executive-level reader. The campaign is the work of Saatchi & Saatchi Advertising and it's sure to catch the eye of even the most casual of readers.

Many of you probably saw the first of these ads in *Business Week* or *USA Today*, when Lava Man leapt off the page. This type of funky campaign may be one small step for a company like Nike, but it is without a doubt one giant leap for HP.

I was privy to review a sampling of the ad series last month. The print ads are focused around a black and white "Mr. Businessman," exemplifying a typical HP executive customer overcoming colorful "business obstacles," such as hurdling a river of lava, shooting a pipeline wave, pole vaulting over an Arctic Sea of ice and one Monty Python-esque shot of a guy climbing a human face. I honestly can't remember the last time I yelled "Look out George! There's a lava flow coming down the hall!"

OK, I get it. It's art. Or as Mary Allard, HP's worldwide marcom manager for the computer systems organizations explains, "It's a conceptual view of the reality CEOs and CIOs face everyday." And I buy that. No question, these ads are powerful. And they are funny. Although, I must admit my first reaction was that maybe a few of those wacky weed plants were still laying around HP's ball fields.

Then I thought of the old adage: "Be careful what you ask for; you just might get it." For years we've been beating the "Cold Dead Fish" analogy when discussing HP's marketing savvy. So now HP counters with Lava Man.

Hep, hip, '90s, eclectically trendy or obtuse; call it what you will — it's definitely not HP. And, it's definitely about time. I applaud HP for once again going their own way. Whether it's PA-RISC technology or a unique ad campaign, HP follows no one.

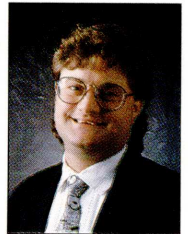
While their competitors blast the TV airwaves with grungy Generation X slackers "cool duding" and "awesomeing" IBM's OS/2 Warp, HP targets the audience who spends the big bucks.

Make no mistake about it. This isn't an image-boosting campaign like IBM and DEC are in the midst of. With reported revenue growths like 45 percent for the HP 9000 and 50 percent for software products such as OpenView and SoftBench, HP's image is solid.

HP's undeniable reputation for quality lives and breeds among its user base and other techno weenies. However, it's the head honcho CEOs and CIOs, who ultimately sign those seven-figure expense reports, that HP hopes to reach with this three- to five-year ad campaign.

HP, which credits about half of its business to international customers, previously tailored ads individually to specific countries. With the new campaign they hope to achieve a consistent image that will increase its presence in the world market. According to Allard, the challenge for HP was to come up with a universal message to introduce the brandname. "Many executives still think printers when they hear HP. This campaign will make them think computers."

So kudos to HP, and those who had the vision and the guts to leap into the lava. You have a fan.



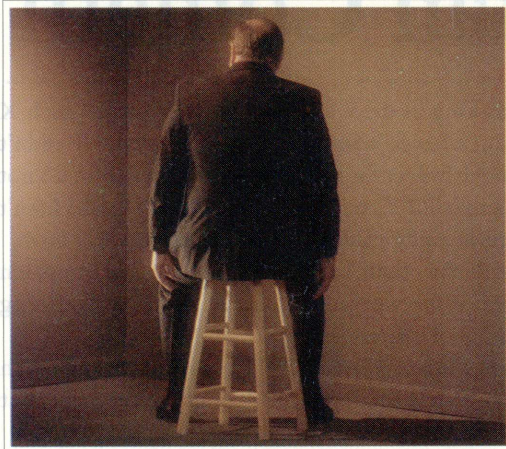
By Charlie Simpson

Charlie Simpson

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**CIRCLE 253 ON READER CARD**

## LETTERS TO THE EDITOR

### A Work In Progress

It was with great interest that I read the November 1994 issue.

The quote that most struck me in the Networking column "X On The HP 9000 Series 800" was the following: "If you are running your applications across other platforms that do not support HP VUE, then you may want to stay with generic X."

We [HP] have been working hard to solve the cross-platform issues through the Common Desktop Environment. The four leading UNIX vendors: HP, IBM, Novell and Sun have banded together to provide a common desktop environment. The services and APIs will be available on all of these platforms. They have even been submitted to X/Open for standardization, which will most likely be concluding this month.

*Axel Deininger  
Engineer/Scientist  
Workstation Technology Division  
Hewlett-Packard*

### UNIX USEFULNESS

Just a note to let you know I enjoyed Fred Mallett's column in the December 1994 issue. Keep up the good work — there's a lot of new guys like me that need the help.

*Edd Carter  
Systems Programmer Analyst  
Enterprise Server Resources  
Florida Power Corp.*

We at *HP Professional* understand and accept the challenge of the global market. So next month, we launch the premier issue of *HP Professional Asia Pacific*.

Through an agreement with Hewlett-Packard Asia Pacific, the bi-monthly, *HP Professional Asia Pacific* will reach over 9,400 users of HP computing systems in Australia, Hong Kong, Japan, Korea, Malaysia, the Peoples Republic of China, Singapore, Thailand and Taiwan. *HP Professional Asia Pacific* provides coverage and analysis on the use and integration of the HP 9000, workstations, PCs, LANs and WANs, as well as the HP 3000 in multivendor environments.

*HP Professional welcomes comments from its readers. Letters may be edited for brevity and clarity, and should be addressed to: HP Professional, 1300 Virginia Dr., Ste. 400, Fort Washington, PA 19034. Fax number: (215) 643-4827. Internet address for staff listed on the masthead:*

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# INDUSTRY WATCH

George A. Thompson

## 10-DING TO THE ENTERPRISE

HP wants you to know, there is no need to be ten-se about HP-UX 10.0, its aspiring enterprise OS. Announced earlier this month, HP's new UNIX OS upgrade is being released in two stages. First, a production quality version called the **New Business Release** will be available in the next few weeks.

According to David Scott, software product line manager, the New Business Release is primarily for three groups: HP ISVs who are waiting for final recertification of their applications; HP installed base customers with new project opportunities; and HP customers with dedi-

cated test or development systems. The New Business Release will support: HP 9000 Series 800 servers (Models E, F, G, H, I, 8x7/890/T) and Series 700 workstations (Models 712/715/720/725/735/755).

Fifty key ISVs — Oracle, Sybase and Informix among them — have been given early access to help them recertify their databases as soon as possible after the General Business Release. The remaining ISVs will have access shortly thereafter. So, according to Scott, customers who can afford to test and implement new systems can get to work early.

A **General Business Release** will be available in mid-1995 intended for

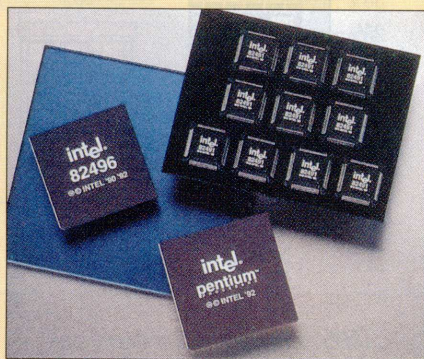
new and current HP-UX 9.x customers. By that time, says Scott, customers will have what they need for a complete solution. All the key ISV apps will have been recertified; all the layered HP applications will be available (only half will be ready in the New Business Release); and also available are the automated update tools that will help "push" the new OS into the installed base. The remaining HP 9000 hardware also will be supported at that time.

HP's different approach with HP-UX 10.0 came after massive customer feedback. "After we introduced HP-UX 9.0, customers complained that the OS couldn't work with all their apps. They didn't have what they needed for a complete solution. Our customers told us to do it this way," says Scott. ●

## INTEL'S REPENTUM

By now, everyone must realize that Intel has given new meaning to the expression — united we stand, divided we fall. After admitting that they knew about a dividing error in the floating point unit of their bread-and-butter Pentium CPU and enduring jokes like "Intel Inside, but can it divide?" the company was forced into a carte blanche replacement policy for the miscalculating chips. Despite their consumer-like "Intel Inside" branding strategy, Intel showed that they are still engineers at heart when they sought to replace only Pentiums CPUs involved in scientific or engineering applications.

According to a post by Intel CEO Andy Grove on the comp.sys.intel newsgroup, "an error is only likely to occur at a frequency on the order of once in nine billion random floating point divides." Apparently, most scientists and engineers, as well as average consumers, (in an unusual



display of unity) didn't like those odds. Beaten by the bad publicity, Intel has since reconsidered its initial response and is replacing all its Pentium CPUs in previously sold systems for those that request it.

HP's PC division is supporting Intel's policies. But NetServer customers, are advised to contact HP through the usual technical support channels for assistance. HP desktop owners can work through Intel or HP.

## ERRATA INSIDE A HOUSE DIVIDED

Adding insult to injury, in January by a 4-3 decision, the California Supreme Court upheld a former ruling of arbitrators who decided that Advanced Micro Devices (AMD) had the right to use Intel's 386 technology without paying royalties. This is a long-standing argument between Intel and AMD that goes back as far as 1982, before Intel achieved its now near-monopolistic stature.

At that time, the company wanted and needed to second-source its 286 CPU technology to others, like AMD, to "seed" the market. AMD claimed that the same agreement also gave them the rights to the 386 CPU as well. Not so, claimed Intel, especially after it saw the potential of having a virtual lock on the market. Intel reneged. But now four years of arbitration and millions of dollars in legal expenses later, the Court finally decided that Intel acted in bad faith. ●



## I SAW A FILM TODAY, OH BOY

HP's Video Communications Division has struck again. Formed in 1992, HP's newest division will provide its newly-named MediaStream Server to Singapore Telecom for an 18-month video-on-demand trial. In the past year, Pacific Telesis, BellSouth and Southern New England Telephone of Connecticut also have contracted HP for the MediaStream Servers. "We're very happy about our increasing momentum," says Greg Hoberg, manager of broadband solutions.

The Singapore government-sponsored "IT 2000" program is expected to reach 300 homes but is planned to eventually reach all 3.2 million residents of Singapore. The Interactive television service will offer a mix of customized news, home shopping and movies, among other interactive features, like interactive learn-

ing for children and adults. "We think [Singapore] is a country that can move very quickly in the interactive TV market — they have invested in fibre and their phone system is already advanced," says Hoberg. HP also is working with Fujitsu on ATM technology, with Phillips on set-top box controllers and with Sybase on the software side.

Unlike other computer systems that are configured to handle video, HP's MediaStream Server is designed specifically for the task of delivering video.

### NOTABLE QUOTABLES

**"At Intel, Quality is Job 0.9999998!"**

— The Wisdom of the Net

"You can solve the video serving problem [with existing computers], but you pay a lot for the CPU to get the I/O you need," explains Hoberg. The reason is the MediaStream's video transfer engine. "It's very efficient at taking video streams off a disk and getting it into the network, while another component handles the control issues," explains Hoberg. The MediaStream server is scalable and able to deliver from 75 to 10,000 streams of video.

But the Video Communications Division is not the only part of HP to get into the interactive act. This past December, HP participated in Time-Warner's test of its well-publicized, but often delayed, interactive TV service called the Full Service Network (FSN). HP provided 3,500 full-color inkjet printers (HP DeskJet 550C and 1200C) to Orlando, Fla. homes that are participating in the project. FSN subscribers will then be able to send print files to the HP printers via SGI-designed

## RESEARCH ROUND-UP

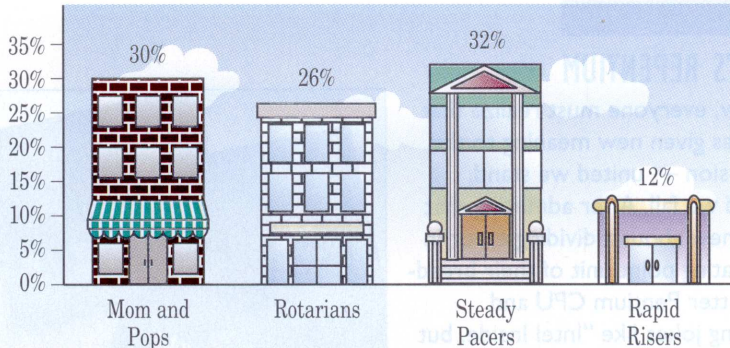
■ HP's OfficeJet will jumpstart the multifunction market, according to BIS strategic Decisions (Norwell, Mass.) helping to crack open a \$3.5 billion market by 1998. The HP OfficeJet provides printing, faxing and scanning functions in a single machine. The market for personal multifunction devices will be driven by growth in the small office/home office (SOHO) market, which by 1995 will include 43 percent of U.S. households, according to Judith Pirani, director of the multifunction products service at BIS.

■ With the reduced cost of computer equipment and the increase in computer use, small businesses now have access to technology that was once the province of Fortune 500 companies only. Yes, small is suddenly looking beautiful to major hardware and software vendors who once shunned small businesses because they preferred the Big Budgets of Big Business. In fact, according to the Business Research Group (BRG; Newton, Mass.) taken as a whole, the small business market will: spend \$16 billion for information technology in 1994; purchase 1 million new

PCs in 1995; and deploy 2 million new telephone lines, while spending \$1.9 billion each month for local and long distance telephone service

According to BRG's "Buying Plans and Perceptions of the Small Business Decision Maker," there are 4.33 million small businesses (non-agricultural enterprises with one to 99 employees) in the United States employing 37.7 million workers. But selling to that group could prove difficult. That's why BRG identified four psychographic profiles: Mom and Pops, Rotarians, Steady Pacers and Rapid Risers. The first three groups

comprise about two-thirds of the 700 IS small business decision makers surveyed. Rapid Risers, the smallest group, however, had the largest average yearly IS budget at \$14,000, followed by Steady Pacers with \$7,000, Rotarians with \$5,200 and Mom and Pops with \$1,900. The Rapid Risers are the classic, start-up entrepreneurial types containing the largest and youngest companies. "[Rapid Risers] are the most likely to adopt emerging technologies," say Warren Childs, director of primary research. For more information, call BRG at (617) 558-4609.





set-top boxes (HP and SGI worked together to develop the software).

Initially, Chrysler, the Warner Brothers Studio Store and the U.S. Postal Service will offer print capability as part of their interactive advertising on FSN. Chrysler plans to let users print information about car features, styling and design safety as well as listings of local Chrysler dealers. Warner Brothers stores and the Postal Service plan to allow users to print maps of their locations.

HP also is poised to participate in the ordering and fulfilling of interactive requests with an HP 3000-based server running Smith-Gardner's Mail Order and Cataloging System (MACS) which resides at the FSN building in Orlando. "The HP 3000/MACS system will automatically verify an item in inventory, confirm the order, then pick up and ship the product to the customer," says Lee LeFaivre, Smith-Gardner's director of marketing. "HP printers will then provide receipts or confirmations of the order that was placed." The HP 3000/MACS system is one of the fastest growing order fulfillment solutions in the direct-marketing industry and also used by QVC, Home Shopping Network, HannoverDirect, Microwarehouse, Hammacher Schlemmer & Company, Levengers and Paper Direct. ●

## SETTING THE PACE

A study by Pacer Software (Westborough, Mass.) found that 33 percent of the companies using their Macintosh connectivity software at DEC sites plan to migrate some their VAX/VMS apps to non-DEC UNIX systems.

About 18 percent of all respondents (66 companies which include corporations and universities) plan to use Sun Microsystems SPARC, 9 percent are planning to use HP 9000s and 8 percent showed an interest in the IBM RS/6000 platform. According to the Pacer, these percentages represent a 355 percent increase in Sun, 40 percent increase in HP and 421 percent in IBM deployment by the end of 1995. ●

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**CIRCLE 106 ON READER CARD**



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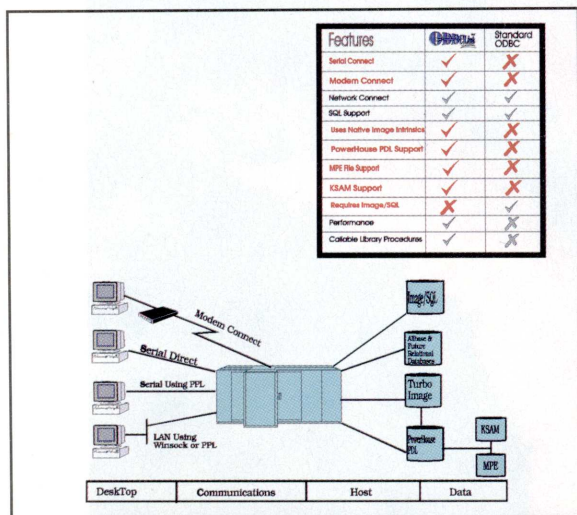
Computer Systems







# M.B. Foster Connects With ODBCLink



## ODBC LINK

- Direct support for TurboIMAGE, KSAM, MPE, IMAGE/SQL and Allbase on MPE/iX 4.0 and higher
- LAN and serial support
- Server-based licensing with unlimited clients costs \$3,000 to \$15,000

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CIRCLE 353 ON READER CARD

**O**DBCLink, from M. B. Foster Associates (Chesterville, Ontario), is an implementation of Microsoft's Open Database Connectivity (ODBC) protocol. With ODBCLink, ODBC-compliant client software, such as Microsoft Access, Visual Basic, Powerbuilder and Cognos' Impromptu, can access TurboIMAGE (IMAGE/SQL) or Allbase/SQL databases, KSAM files and MPE flat files on an HP 3000 host over a LAN or serial connection.

ODBCLink supports four communications methods: serial, modem connect, WRQ's PPL or WinSock driver. It can handle setup and dial scripts for modem connections as well as sign-on strings for serial direct and serial modem connections. ODBCLink has two distinguishing fea-

tures: it implements the ODBC protocol over serial connections; and it enables direct connection to "native" TurboIMAGE databases without having to "attach" the database to a DBE.

All ODBC level-1 functions are supported except cursor naming and SQLPUTDATA in chunks. Also supported are ODBC LONGVARBINARY data types for downloading binary large objects (BLOBs), such as compressed photographs or document images, stored on the HP host as Allbase/SQL LONGVARBINARY items. Field types supported include CHAR, VARCHAR, INTEGER, SMALLINT, LONGVARCHAR, LONGVARBINARY, single and double precision FLOAT and PACKED DECIMAL.

ODBCLink supports the Allbase/SQL and IMAGE/SQL syntax and a subset of SQL for direct TurboIMAGE access. The supported commands for TurboIMAGE include INSERT, DELETE, UPDATE and SELECT with outer-join, complex WHERE clauses, ORDER BY and DISTINCT. Aggregate functions, GROUP BY, calculated fields, subqueries, COMMIT and ROLLBACK are not implemented.

Because roughly 25 percent of all HP 3000 sites already use Cognos' PowerHouse 4GL, the PowerHouse Dictionary (PDL)

is required to access KSAM or MPE files. Access methods include keyed reads off KSAM files, and joins between KSAM files and TurboIMAGE databases.

The DataExpress File Description Generator (DXFDGEN) Tool will be added in a second quarter release. Also planned for the same release is support for Oracle and for the TurboIMAGE Third Party Indexing (TPI) Interface. The TPI provides the interface to the Omnidex and the Superdex indexing products. These tools improve the performance and functionality of TurboIMAGE access.

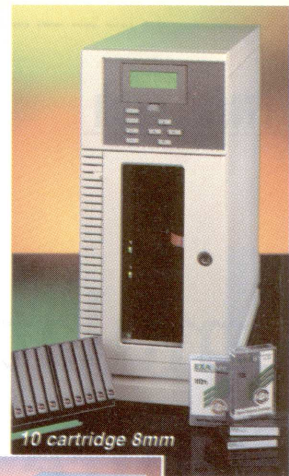
Originally intended to be a standalone product, M. B. Foster's current strategy calls for ODBCLink to merge in the functionality of Core DataExpress during 1995. The addition of DXFDGEN is the first step in this process. Server-based licensing with unlimited clients costs between \$3,000 and \$15,000.

The ODBCLink server currently runs on any HP 3000 Series 9xx host under MPE/iX 4.0 or higher. Client software is supported under Microsoft Windows 3.1 or Windows for Workgroups 3.11.

A server version for the HP 9000, initially supporting ODBC access to Allbase/SQL and Oracle, is planned for mid-1995.

—John P. Burke,  
HP 3000 Columnist





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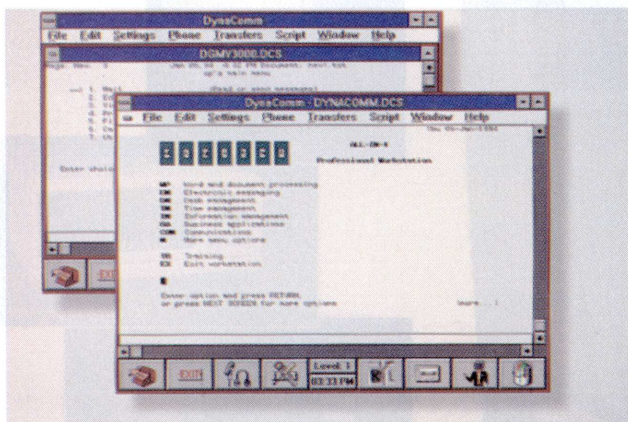
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CIRCLE 354 ON READER CARD

**T**he joy of emulation is the ability to focus on an application without having to worry about the system it is running on. FutureSoft's (Houston, Texas) DynaComm, a communications package for Microsoft Windows, allows users to do just that. DynaComm supports a wide range of binary transfer protocols and most popular emulation programs. It allows users to store and recall communications parameters and provides a programmable toolbar which can store frequently used strings, such as passwords and login sequences.

According to Eric Grayson, vice president and European representative at FutureSoft Europe in The Netherlands, DynaComm's emulation ability is what sets it apart from its competitors.

"DynaComm is sold as one product for all emulations," Grayson says. Emulation support includes: VT-52, VT-100, VT-220, VT-340 and Pathworks 4.x, as well as ADDS VP/60, ANSI Color, AT&T 605/705, CompuServe (Vidtex), Data General Dasher, Generic (TTY), HP 9000 Series 700/94, IBM 3101, Televideo 925/950 and Wyse 50/60 terminals. The international version includes Vidtel, MiniTel and ViewData/Prestel support.

Version 3.2 includes support for Visual Basic (VB). With the DynaComm Toolkit for Visual Basic, programmers are now able to write custom Windows front-ends that can access all of DynaComm 3.2's functionality, such as connectivity, emulation options and file transfer protocols, such as Kermit, XModem (Checksum and CRC), YModem (batch mode), CompuServe B+, YModem/G and YModem-251.

At the heart of the setup program is the file-by-file selective install feature which lets users install the combination connectors, emulators and protocols they need, thus minimizing DynaComm's footprint on servers or PCs. Users also have access to popular TCP/IP utilities such as PING, ftp and SNMP or other external applications (Word or Excel). Users are given the option to install these utilities as an icon on the default toolbar. It

also offers access to other Windows applications via Dynamic Data Exchange (DDE), which can share information between applications.

The enhanced dialog editor lets users, through a powerful scripting language, create custom front-ends for mainframe applications with graphical tools which the dialog editor then interprets, creating the script code necessary to duplicate the design. The scripting language contains over 350 commands and functions and allows automated session with remote systems. It supports real numbers, floating point math, parameter passing, 192 variables and indirect variable referencing. And, it is compiled for fast execution.

Other new features include: improved ANSI emulation; new scripting verbs for passing global variables back to the dialing directory; updated online help; an enhanced Queue dialer; keyboard remapping facilities; a toolbar editor; and an updated user's guide.

U.S. clients include AT&T GIS, Dun & Bradstreet and HP. European clients include the Statistic Ministry of Hungary, the Norwegian Army and the RATP (Paris Metro). Price starts at \$249 for a single user.

—Deborah Schwartz,  
Assistant Editor



### 270MB UNIT IS AVAILABLE FOR HP9153 REPLACEMENT

ISA announced the addition of a new 270 MB unit to its family of HP9153 replacement Hard Drives with Floppy. ISA has been supplying 46MB and 118 MB units in the market for more than 10 years, and this release would give more choice to the users. Price is \$2,220.00. Contact Floppy Disk Family Dept. 713/493-9925.

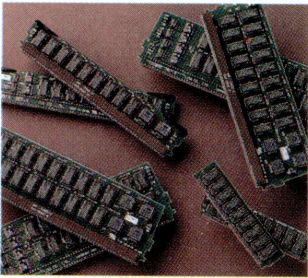
**CIRCLE 403 ON READER CARD**



### MEMORY BOARDS AND VIDEO RAM AVAILABLE FOR HP712

ISA introduced memory cards and video RAM cards for HP712. The memory cards are available in 64MB and 32MB capacities. For pricing, contact Texas ISA, Inc., 713/493-9925.

**CIRCLE 401 ON READER CARD**



### MULTIFUNCTION 4MM SUB-SYSTEM

Texas ISA, Inc. introduced a new 32GB Multifunction 4MM Sub-System at Interex '94 in Denver, Colorado. Two models are available: 5032S-Dual for DDS-I and 5034S-Dual for DDS-II. The unit features: off-line tape-to-tape copy, verify, mirroring, cascading, and alternating drives. Supports HP, SUN, IBM and DEC. Contact John Larmie; 713/493-5746.

**CIRCLE 402 ON READER CARD**



### ISA NEW POWER MANAGEMENT SOLUTIONS

ISA and Mitsubishi Electric developed a new intelligent UPS (Uninterruptible Power Supply) system combined with ISA's well-known Model 7020, or 7030 Auto Shut-Down unit. The system features: Simplified shutdown process initiation, Timer operation, Network, Remote Control, Digital and analog sensor inputs. Multi-Platform support (HP,



Sun, IBM, DEC, SGI, etc.) 1, 2, 3KVA models are available.

**CIRCLE 404 ON READER CARD**

### HP9122C HP9153C Replacements

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HP-IB SS/80

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#### ISA 1060S (NEW SCSI)

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SCSI-for HP9000 300/400/  
700/800

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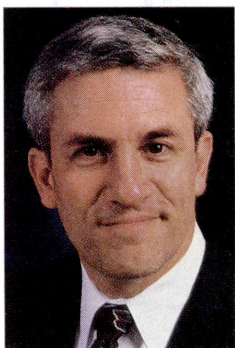
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# Managing The CA Way

Computer Associates International Inc. Enhances UniCenter For Client-Server



"Computer Associates bought [Ingres] to be an underlying technology for its own products."

**Alan Paller**  
Director of Open Systems  
Computer Associates  
International Inc.

## Computer Associates International Inc.

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CIRCLE 352 ON READER CARD

Open systems and client-server computing promise real benefits. Unfortunately, a low cost-of-ownership is not usually one of them. With enhancements and pricing adjustments for its UniCenter product line, as well its purchase of the Ingres database (acquired from the ASK Group this past June), Computer Associates (CA; Islandia, N.Y.) hopes to help improve the transition to, and reduce some of the costs of, client-server technology.

"A key criteria for our clients was that UniCenter support multiple, heterogeneous platforms," says Yogesh Gupta, senior vice president for product strategy at CA. In October 1994, CA added the CA-Unicenter/Star cross-platform systems management workstation to its Unicenter offering. Star provides a single point of control for the administration of OS/2, MVS, AS/400, Microsoft Windows NT and NetWare platforms and software architectures. "Star provides a systems administrator with a single desktop and single graphical user interface to manage all of these environments across an entire enterprise," says Gupta.

Two additional products, CA-Unicenter Software Delivery and CA-Unicenter/DB Alert and Systems Alert, help system administrators deal with problems inherent to distributed platforms.

CA-Unicenter Software Delivery automates the distribution of programs and updates across Novell, NT and OS/2 LANs; UNIX, Windows and DOS boxes; and the AS/400 and mainframes. CA-Unicenter/DB Alert and Systems Alert allows administrators to detect, identify and correct problems before they affect the performance of database and operating systems.

CA has also cut prices for small users or small departments within large organizations, while restructuring its licensing policy for large users. "Our pricing was such that volume discounts were applied independently to each platform," Gupta says. Now a customer can combine all platforms in a single contract, which makes Unicenter more attractive for large users with heterogeneous machines.

CA also has lowered prices for the CA-Ingres database. Although everyone agreed that Ingres was the best database, it was also higher priced than anything else, says Alan Paller, director of open systems. The ASK Group couldn't afford to charge less, he explains, but that's no obstacle for a company the size of CA. To prove it, this past September, CA cut prices for CA-Ingres by up to 60 percent. "Now you have to pay a significant premium for either Sybase or Oracle," Paller notes.

Ingres was a "good fit" for CA

for four reasons: a loyal customer base; superior application development tools; the best available data replication technology and the stability of the product. "There was an uncertainty in the industry about whether or not CA would be able to add value to Ingres or whether we were buying it just to add that customer base to our own," Paller says. "That uncertainty was mistaken. We bought it to be an underlying technology for our own products."

Since June 1994, CA has added value in three areas. "We have added new functions that make it particularly good in mission-critical applications," Paller says. "And we introduced a version for the Windows environment. Third, we improved the performance of the client version for client-server applications by 300 percent."

When it comes to HP, Gupta and Paller agree there is a good deal of synergy. CA-Unicenter was available for HP platforms before any other. And Ingres is bundled with HP's OpenView. According to Paller, "It's the underlying repository for many OpenView sites, so it has been optimized for that. For the kinds of things we're adding to the database, that's the right place for us."

—Sam Dickey,  
Contributing Author



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# Bit

Pump Up Your Interfaces

A person wearing a white lab coat is holding a computer monitor. The monitor displays a green and white interface. The person's face is partially visible, looking down at the monitor. The background is a light blue and white pattern.

*by*



## With GUI Builders



*The move from character-mode terminals to desktop PCs is good news for most knowledge workers, but it weighs heavy on the shoulders of the corporate software developers who must support their efforts. Programming for a GUI environment is an order of magnitude more complex than programming for character-based applications. That problem is exacerbated by the fact that users' expectations about ease-of-use rise substantially when they use a graphical workstation or PC.*

**As user interfaces** have become more complex, the tools for building them have become more comprehensive and easier to use. Rather than coding, compiling and testing pages of dense, low-level interface code, developers now work within clean, well-supported visual development environments.

Drawing from class libraries of widgets and controls, pointing-and-clicking their way through thousands of colors and fonts, buttons, list boxes and menus, developers are constructing elegant user interfaces — all with little or no coding.

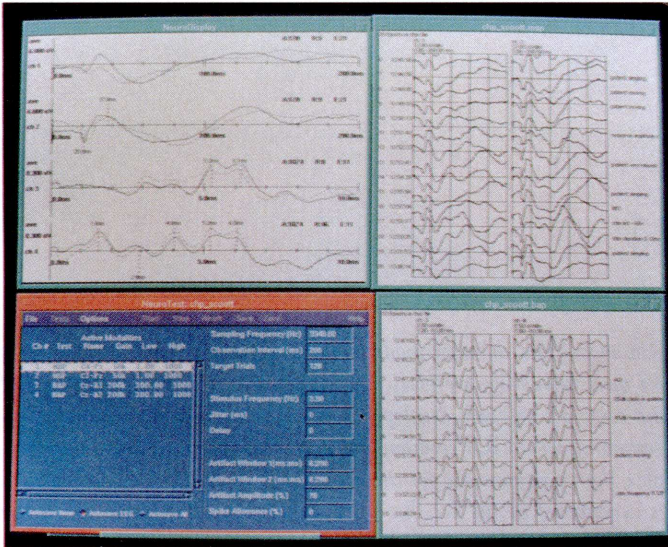
Commonly called GUI builders, these products drastically simplify the process of building bit-mapped interfaces for graphical, windowing systems such as Microsoft Windows and Motif. There are two basic types of GUI building products: interactive design tools (IDT) and user interface management systems (UIMS).

### INTERACTIVE DESIGN TOOLS

INTERACTIVE DESIGN TOOLS offer various pre-built objects for user interface development. Their focus is the interface and nothing but the interface. After completing a design session with an IDT, the actual interface code is generated automatically, typically in C, C++ or the Motif User Interface Language (UIL). Developers must write all the additional code to bring the interface to life, either in the native language or with third-party tools.

IDTs are a good choice for iterative GUI development efforts where user and developer need to work side by side, says Bill Madden, a systems software engineer at Computational Diagnostics Inc. (CDI; Pittsburgh, Pa.), an HP value-added reseller in the medical arena. "Users can sit down with developers and give them immediate feedback, do workflow analysis and sug-





*CDI's NeuroNet provides real-time acquisition, analysis and display of neurophysiological data during brain surgery.*

gest changes which can be implemented immediately," Madden says.

Madden used Imperial Software Technology Inc.'s (Reading, United Kingdom) X-Designer to create a sophisticated user interface for CDI's NeuroNet product, which provides real-time acquisition, analysis and display of neurophysiological data during brain surgery. He created dozens of user friendly screen displays from X-Designer's packaged controls, then created a few unique instrumentation widgets with the X-Designer widget builder.

"We wrote 11,000 lines of bug-free interface code in two days," Madden says. "That would have been months of work without a GUI builder." The interface consists of dozens of Motif widgets, including cascading menus, push and toggle buttons, row-column widgets and a scrolling list widget.

The users of the NeuroNet system are not computer specialists, so a GUI was essential. "They needed an easy and effective way to visualize changes to the nervous system through an intuitive user interface," Madden says. "X-Designer allowed us to quickly create controls that mimic the displays from equipment and instruments they are already familiar with."

## USER INTERFACE MANAGEMENT SYSTEMS

UNLIKE INTERACTIVE DESIGN tools, UIMS typically include some type of language interpreter and compilation environment for creating application logic along with the interface. These extra capabilities let you interactively test the behavior of an interface as you build it. Because these tools automate a larger portion of the life cycle and allow you to actively test your designs as working applications, some developers say they can create better interfaces. On the other hand, UIMS are usually based on a proprietary language, similar to some 4GL tools.

To qualify as a UIMS, a GUI builder must have three characteristics, says Mike Foody, president of Visual Edge Software Ltd. (St. Laurent, Quebec). The first is a complete set of controls which can be used right out of the box to construct standard interface

## PREFAB SOFTWARE DEVELOPMENT

Hand in hand with the rising popularity of GUI builders is the emergence of a companion industry for user interface widgets. Widgets are pre-built objects, or user interface controls, that can be pulled intact into applications. Often, incorporating off-the-shelf widgets into an application is the next logical step after user interface development with a GUI builder.

"Software development is becoming more and more like a factory," notes Ian Kent, a system architect at Bell Northern Research (BNR), the research arm of Northern Telecom (Ottawa, Ontario), a major telecommunications switching supplier. "Developers are buying more and more and building less and less. It is similar to what has been happening in the manufacturing world for a long time."

BNR, for example, uses C++ and X-Motif to develop applications for analyzing and visualizing result data from the operation and testing of BNR switches. Developers, such as Kent, perform high-level analysis, design and requirements planning, then play the role of integrators piecing together specific applications from prefabricated components. "We buy off-the-shelf objects for as many parts of each application as we can," says Kent.

General purpose objects that BNR can't find ready-made are custom crafted by a software development shop in India. Anything that's left, such as unique logic and controls that pertain to their switching business, they create from scratch using native C++ code on HP 9000 Series 300, 400 and 700 workstations running the HP-UX 9.0 operating system.

"We try to stick to our domain, which is analyzing the results produced by switches," Kent emphasizes. "Anything that fits into a general domain, such as strings, dates or graphs, we find it much more cost effective to buy ready-made. This way, we can focus our development efforts on the strategic aspects of the business that we know best."

BNR uses XRT Widgets from the KL Group (Toronto, Ontario) like: XRT/3d to perform 3D surface, contour and bar graphing; XRT/table to display and edit tabular information; and XRT/graph for two-dimensional graphs, pie charts and X-Y plots.

Two other popular vendors of widgets for Motif developers are Integrated Computer Solutions Inc. (ICS; Cambridge, Mass.) and Non Standard Logic Inc. Building on the basic Motif toolkit, the ICS EnhancementPak provides 16 additional widgets, including Button Box, Color Selector, Font Selector, Icon Box, Pixmap Editor and Toolbar. NSL offers the Widget Library as well as the Widget Factory for constructing custom widgets and interface components.

— DB



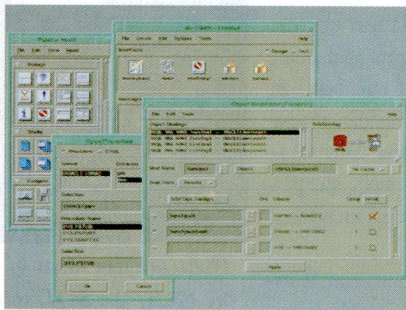
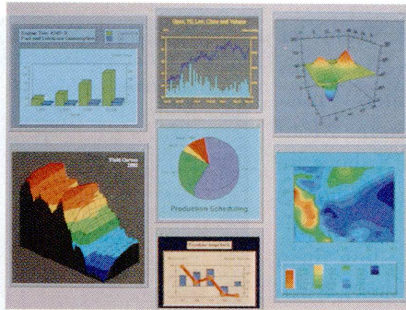
items such as pop-up windows, pull-down menus, text fields, sliders and buttons.

The second characteristic is a well-developed add-on market of third-party controls to perform specific functions, such as widgets for statistical mapping, tabular display of data and 3D graphing. The last characteristic is a development environment allowing developers to build their own user interface controls.

For example, a developer at a financial brokerage house might create a stock-quote control that monitors market information; while a developer in a manufacturing plant might create an instrumentation control that looks and behaves like a pressure gauge.

Examples of UIMS products include: XFaceMaker from Non Standard Logic Inc. (Boston, Mass.); UIM/X from Visual Edge Software Ltd; ezX from Sunrise Software International (Middletown, R.I.); and Builder Xcessory from Integrated Computer Solutions (ICS; Cambridge, Mass.).

With their customizing capabilities,



*For the GUI, the interface must be as flexible as its users are diversified.*

UIMS are often used by software developers to add complete Motif GUI development capabilities to their products. For example, Visual Numerics Inc. (Boulder, Colo.) has integrated Visual Edge's UIM/X product with PV-WAVE, its visual data analysis (VDA) software.

PV-WAVE's user interface widgets are designed for single users or small groups of users, but to create a corporate-wide interface, they are often immersed in X Windows or Motif toolkit coding, explains Shawn Javid, PV-WAVE product manager. "UIM/X extends the PV-WAVE environment to include an integrated GUI development environment," he says. Developers use UIM/X to incorporate PV-WAVE functions into a complete Motif interface."

## A WINDOWS LEIT- MOTIF

PORTABILITY between the UNIX and Windows environments was a big concern

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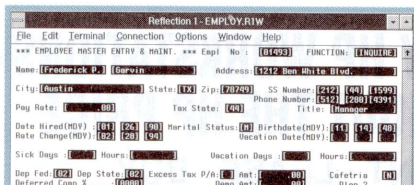
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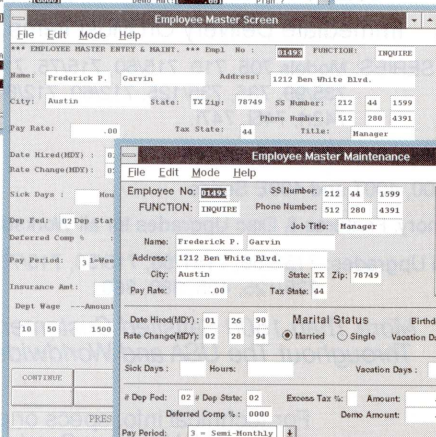
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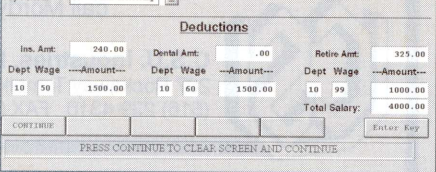
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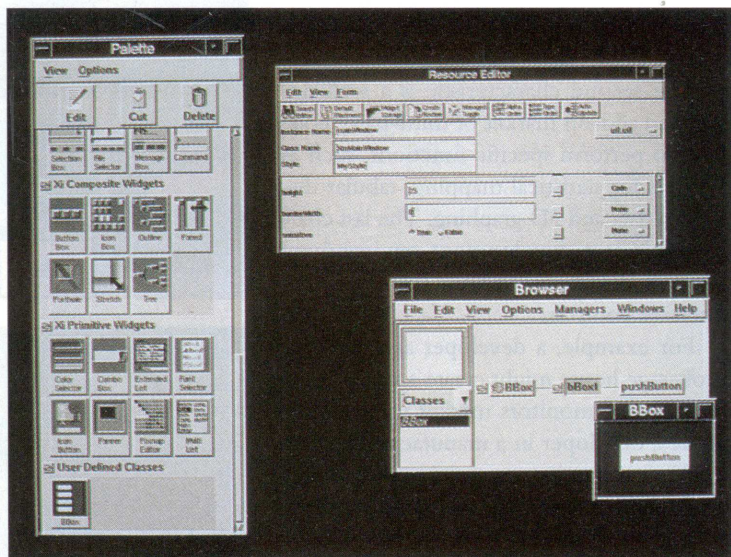


for Visual Numerics and CDI. Although CDI's NeuroNet is being developed and deployed on HP 9000 workstations, Madden plans to port the entire system to the Windows platform as well. That illustrates an important trend in the Motif GUI development market — even die-hard UNIX shops are keeping their options open to include an eventual Windows migration.

An upcoming version of X-Designer will allow them to regenerate their existing UNIX code for Windows, Madden says, converting X Designer widgets and controls from Motif classes to the equivalent Microsoft foundation classes. GUI builder vendors are responding with widgets and controls that are cross-platform ready right out of the box, as well as with development environments for building new cross-platform widgets and controls from scratch. But vendors differ widely in the degree to which they have simplified the process of actually porting complete user interfaces from one GUI to another.

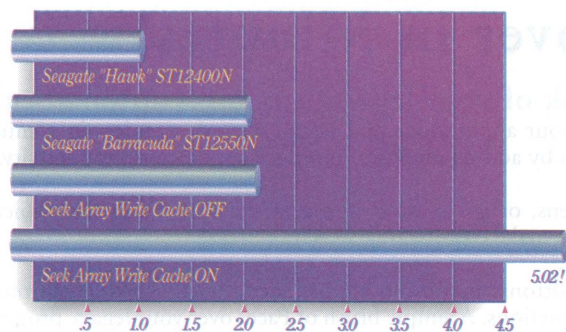
"Unfortunately, there are distinct differences between Windows and Motif, which results in a lowest common denominator of commonality," Foody says. "If you want a truly portable interface, you are limited in how deep you can go into either GUI."

Some GUI builder vendors solve this dilemma by shipping two



*There are five areas of coding in a client-server development effort: the GUI, the SQL statement, business rules, the connection and rules for SQL.*

distinct versions of each control, one for Motif and one for Windows. When developers construct new controls, they reference a



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portable API that comes with the GUI building product, and the API sorts out the differences between the two platforms. But developers still need extensive knowledge of the nuances of each GUI environment if they wish to build a slick, cross-platform interface. Foody admits. "No matter what tool you use, there is still a fair amount of hand coding and tweaking that must be done. Developers must know each deployment platform well in order to do a good job."

## STEPPING THROUGH THE LIFE CYCLE

AS SOPHISTICATED AS GUI builders have become for user interface development, it is important to remember that they still automate only a small portion of the application development process. There are five areas where coding is normally required in any serious client-server development effort:

- ▶ 1. The GUI, including the menus, dialogues and other interface objects;
- ▶ 2. SQL statements that are executed to insert, retrieve, delete or update data;
- ▶ 3. Business rules, which determine just what the application actually does;
- ▶ 4. The connections between the business rules and the GUI,

which determine the action that the interface takes when an event such as a mouse click occurs;

- ▶ 5. Rules for SQL, which determine what is done with data once it is retrieved (where and how it is displayed)

Different tools exist for automating each of these phases, and some can automate several. 4GL products such as Powersoft Corp.'s (Concord, Mass.) PowerBuilder, for example, have excellent user interface development capabilities, and can go on to automate each of the other four portions of the application to some degree.

But, unlike a GUI builder, once you are through with the PowerBuilder development process, your interface is dependent on PowerBuilder, a proprietary solution. GUI builders remain popular because they generate standard code, such as C or C++, meaning developers aren't necessarily locked into a proprietary environment for the remainder of the development process. It also means that it's easier to integrate that interface into many different types of C-based applications.

"A GUI builder gives you more flexibility," Foody adds. "If you start in a 4GL, you have to remain in that 4GL. But if you start in a standard language, such as C or C++, you can take any number of roads to complete the application."

GUI builders also tend to construct more polished user interfaces than visual 4GL products, because that is their primary

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focus. And while some GUI builders have compilation environments and language interpreters to create rudimentary business logic, they all offer links to other development tools and third-party utilities.

For example, BlueStone Consulting (Mount Laurel, N.J.), a software firm, bundles sophisticated database development capabilities with the UIM/X GUI builder to create a product called db-UIM/X. This allows developers to create relational database transactions and attach database access logic to fields and events in the GUI without having to drop down into a low-level language. There also are application frameworks, such as HP SoftBench, that include GUI builders as well as configuration controls, modeling tools, text editors, browsers, database managers and debuggers.

"The lines between the different types of development tools are beginning to blur," Foody concludes. "People don't want to build GUIs. They want to build applications. In that sense, all GUI tools are becoming more solution oriented."—David Baum is a freelance business writer based in Santa Barbara, Calif. who writes about information technology. He can be reached at DWBAUM@MCIMAIL.COM.

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# INTER- FACES



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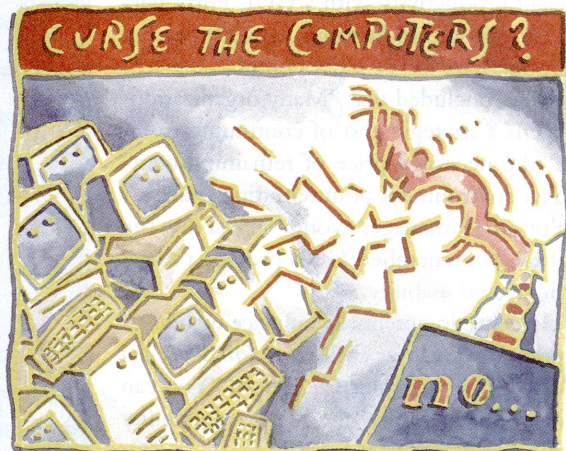
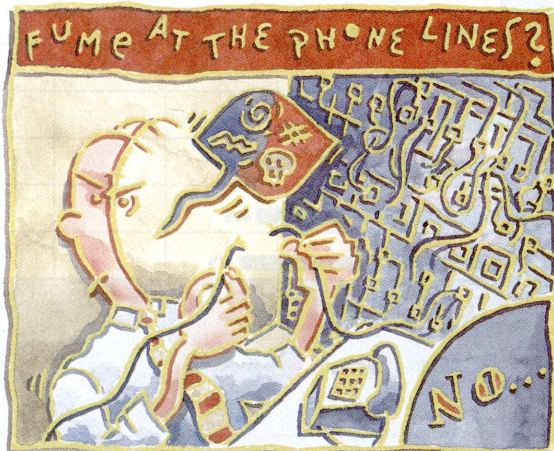
**a**t one time, graphical user interfaces (GUIs) were called WIMPy, WIMPy, WIMPy, after the terms that made up the acronym: Windows, Icons, Menus and Pointing devices. They were treated with disdain by programmers; users were indifferent. But the success of the Apple Macintosh and now Microsoft's Windows on PCs has made GUIs quite acceptable, if not the technology to obtain.

In 1990, market researchers Temple, Barker and Sloane Inc. (Lexington, Mass.) did a study of white-collar employees working on character-based and graphical user interfaces. They found that both novice and experienced computer users worked faster and made

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## Pretty Interface

fewer mistakes with GUIs. And learning new tasks was easier too.

But, in a 1992 survey by the Microcomputer Managers Association (MMA; Warren, N.J.) entitled "The Real Cost of the Graphical User Interface," only 51 percent of the IS managers polled reported increased staff productivity with a GUI. Forty percent cited no gain in productivity, while 9 percent suffered productivity losses. How come?

The MMA concluded that "Many organizations consider GUIs a strategic cost of continuing to do business ... the necessary price of remaining competitive in an environment of unremitting change." So if you're an IS manager wondering about the benefits of GUIs, remember: GUIs provide the *potential* for increased usability.

"GUI elements do potentially enhance usability," says Deborah J. Mayhew, author of *Principles and Guidelines in Software User Interface Design*. "You can measure in an objective way the increased usability of a [graphical user] interface.

"It's very easy to design a bad graphical interface," says Mayhew. "You have so many ways to go wrong [clever but unlabeled icons, radio buttons with cryptic text] and so many more capabilities [pull-down lists hiding essential information; unexpected pop-up dialog boxes], that it's possible to make a vastly more confusing interface."

## The Good, The Bad And The Usable

THE FIRST STEP IS understanding what usability is, and what it isn't. According to Brad Hesse, co-director of the Center for Research on Technology (Palo Alto, Calif.), usability has two components. The first is efficiency. How effectively are people able to use the product? The second is emotional. "How effectively satisfying is the experience? People have to *like* the product.

"A usable product is compatible with a user's information processing abilities," suggests Hesse. Not surprisingly, the same factors that contribute to application efficiency make it less frustrating and more likable. Consistency, for example. "The key to usability is doing things in a standard fashion, so that there are few surprises," says Dave Gordon, principal at Blue Ox Software (Burke, Va.) "The pedals in a car, for example, present a standard interface. The pedal on the right is always the gas, the one in the middle is the brake, and the one on the left is the clutch. Eventually, we'll get smart enough to make software the same way."

The "pizazz" of a graphical interface — cute icons, 3D buttons, shrinking and exploding windows — has to contribute to effective use. Otherwise, it gets in the way. Users tend to be irritated by arrays of colorfully confusing icons or audible

Figure 1

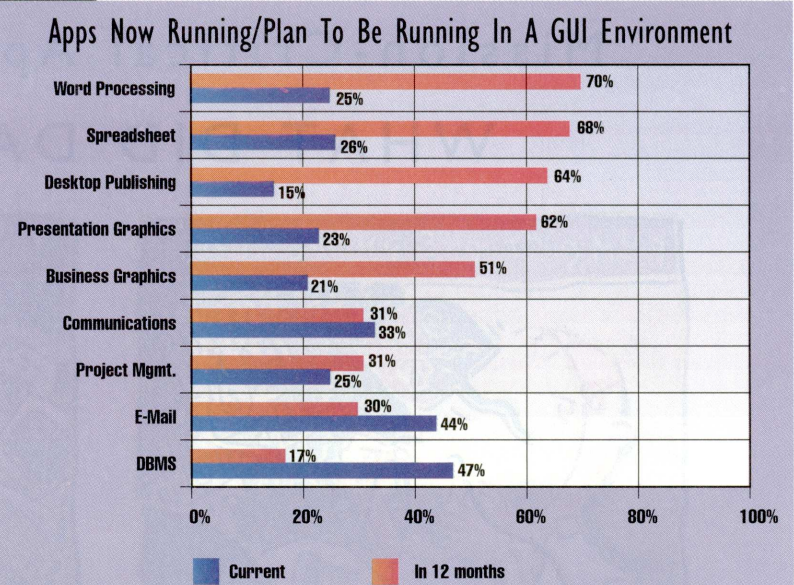
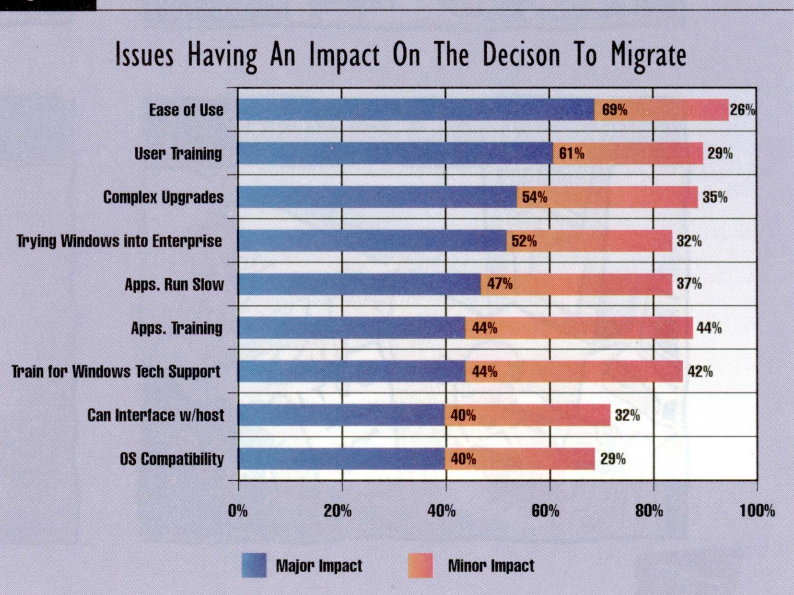


Figure 2



error signals that provide no help in correcting or recovering from the error. "A bad GUI," says Hesse, "leads people down wrong roads or into blind alleys."

Usability does not happen by chance. There's "a whole bag of methodological tricks that allow us to develop more usable interfaces," says Mayhew. She recommends integrating specified usability tasks into the normal software development life cycle.

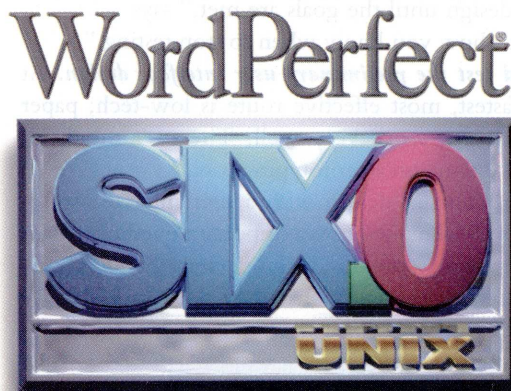
**Define the scope of the development, including a user profile.** Typical profile characteristics include things like the level of user education and even typing skill. It's also important to know whether or not the users will be trained, and how frequently they will use the software.

Very frequent users, says Mayhew, can learn things in spite of the design. "Because they interact with the application so often, they're more interested in speed and efficiency than in



**This began as a couple of atoms.**

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## Pretty Interface

ease-of-learning.” Intermittent users, on the other hand, require that the software be easy to learn and to remember. For them, speed and efficiency are secondary to learning ease.

**Develop functional specifications that include task analysis and usability goal setting.** Task analysis — understanding the work to be supported by the software — is essential. “If you don’t understand how the work flows and how the workers think about their work, you design in the dark,” says Mayhew. “You may provide the required functionality, but end up structuring it in a way that makes it extremely tedious, confusing or error-prone.”

**Set objective, measurable goals for usability.** Plan so that a key task should not take any longer than X amount of seconds or Y amount of minutes. Users should not, even in the learning phase, make more than a specified number of errors. “You can manipulate the design until the goals are met,” says Mayhew. “That’s how you know when to stop testing.”

**Mock-up and test the preliminary user interface design.** At this stage, the fastest, most effective route is low-tech; paper and pencil mock-ups work very well. The user mock-up doesn’t have to be done on a prototyping tool.

Check the preliminary design with a user interface walk-through. “You’re checking to answer important questions,” says Mayhew. “For example, does this design tap into the users’ current mental models of the work that they do? Does it make sense to them?”

## A UNIX FACE IN A JAR

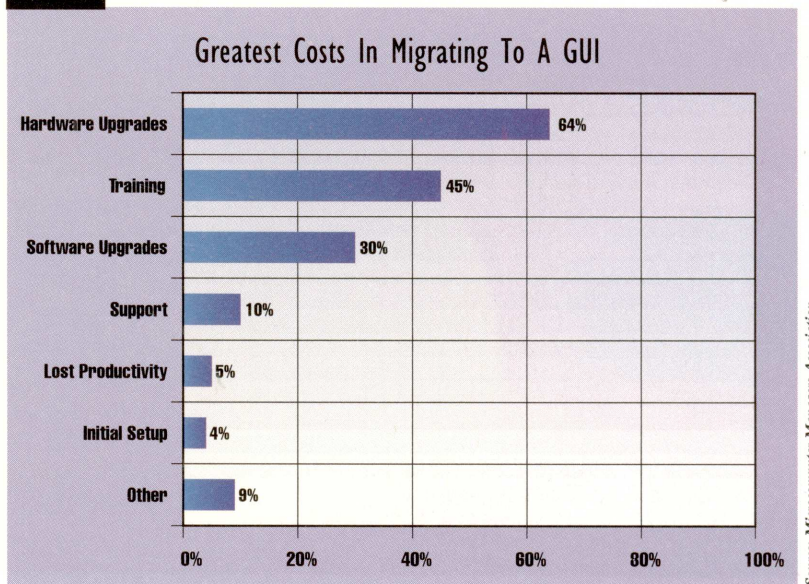
UNIX-based GUI development is conceptually no different from GUI development for other platforms. The basic considerations are the same: task analysis, user profiles and feedback. The trick is to take advantage of the multiuser, multitasking capabilities of UNIX while also taking advantage of a GUI’s ease of use. “Usability,” says Peter Winston, president of Integrated Computer Solutions Inc. (Cambridge, Mass.), “is a programmer’s ability to make an application intuitive for the user.”

UNIX intuitive? Well, it can be, when you disguise the command line with a graphical face. “From a UNIX perspective, the user interface stack is three-tiered,” says Jon Brewster, section manager at HP’s Corvallis Software Lab (Corvallis, Ore.). “There’s the core X Window system; the Motif toolkit, the parts with which you build higher-level full-service entities; and the [graphical] desktop, such as HP VUE, that make up the total user environment.”

A single-solution common desktop environment (CDE) is an important part of UNIX GUI development, says Brewster. “We want a single desktop implementation that is shared by all the competitors in the UNIX business.”

As you might guess, behind every easy-to-use interface is a lot of hard-to-write code. “Going from command line interfaces to GUI quadruples program size,” says Winston. “GUIs manipulate a lot of things that command

Figure 3



**Prototype and test the user interface design.** After evaluating and refining the high-level mock-ups, you’re ready for detailed user interface design and formal usability testing. Build a live, interactive, working prototype. Work with representative users performing representative tasks. Time their performance.

Track the number and types of errors they make. “I use the ‘stand-over-the-shoulder’ approach,” says Gordon. If users get up to speed quickly, he says, “then I know I’ve done a pretty good job. If they come up against blind alleys, I know I need to reorganize.”

Watch the steps users go through while working with the

line interfaces don’t have to worry about.” Winston cites several ways to make the most of your UNIX GUI development resources:

- Think about the interface first. “Most developers,” says Winston, “think first about what they want the program to do. Then they think about how they want the program to operate, and what user input is required. Finally, they think about the interface. That’s 100 percent wrong.”
- Make sure your application is object-oriented. Reusable objects bring consistency up and cost down.
- Select a tool with a palette of the right objects. For example, Motif lets you have icons or labels, but not both. Usability calls for an object set that allows both.

“This is a UNIX environment. That makes it fun,” says Brewster. “You have to allow the system administrator to install applications where they run best on the network without affecting how the user interacts with them or what the ISV does with them. You also need to integrate security into the environment unobtrusively [to the user], but without interfering with the system administrator’s ability to control workgroup and individual access to the system.” —JH



Usability doesn't come for free. A cost-benefit analysis involves selecting which usability tasks you can afford. You have to decide between quick and simple, or rigorous and complex.

product. Did all users get confused at the same point? Could they find what they needed? Did they have difficulty performing a task that is fairly simple in the manual world?

Compare their performance against your usability goals. Analyze any discrepancies; then go back and design the problems out of the interface.

*Run that play until you get it right.* Interface design and functionality integration go on in parallel. The user interface design now becomes an iterative process: design and test; then go back, redesign and test again. While the interface is being designed, developed and tested, other members of the project

are performing function and data modeling, fleshing out all the details for the required functionality.

Usability doesn't come for free. A cost-benefit analysis typically involves selecting which usability tasks you can afford to do on a given project. You have to decide between quick and simple, or rigorous and complex, maintains Mayhew. "But it's usually laughably easy to cost-justify fairly major expenditures on usability." Shaving one second off the time required for a single transaction doesn't sound like much. But if you have 1,000 users, with each user churning out 50 transactions a day, those shaved seconds begin to add up to hours.—*Judith Harper is a freelance writer based in Cincinnati, Ohio. She can be reached at 70754.3452@compuserve.com.*

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# The Day Of The Dolphin

**H**P Laboratories in Bristol, England has unveiled a patent-

pending model-based reasoning technology, code-named "Dolphin," that will enable HP products to support centralized configuration and administration of heterogeneous client-server environments.

This new technology uses object-oriented concepts, such as class and inheritance, to help mask differences in underlying operating systems and hardware from the administrators responsible for managing those systems.

Ask any systems administrator what it's like to maintain some sort of centralized control in a large, geographically-dispersed, mixed-vendor network, and you'll find out right away why Dolphin could easily help HP swim away with a sizable chunk of the growing market for UNIX systems administration tools.

The first incarnation of Dolphin in an HP product will occur next month, when HP ships the first release of HP AdminCenter. Announced in November 1994, AdminCenter joins OperationsCenter and HP PerfView as the third of a trio of major systems management products designed to complement HP's flagship network management offering, HP OpenView.

HP OperationsCenter is a high-end

product that consolidates asynchronous messages from UNIX systems, automating much of the process of digging through obscure UNIX logfiles to determine the status of critical system resources such as swap space, CPU utilization and disk I/O processes. HP PerfView and its associated utilities, Performance Collection Software (PCS) and GlancePlus, let UNIX gurus drill down and analyze in great detail the performance of UNIX servers and high-end workstations.

AdminCenter is different from OperationsCenter and PerfView in that it targets configuration and change control of software, peripherals, file systems and even user-related data. In particular, the Dolphin technology will allow AdminCenter to tackle the very knotty problem of simplifying user administration in mixed environments.

In an all HP-UX environment, for example, an organization may get by with one or several HP-UX gurus to handle the process of assigning user IDs, passwords and privileges, network IDs and ensuring users have the right software loaded onto their workstations. But in large geographically dispersed networks supporting several flavors of UNIX as well as NetWare, it may well be cost-prohibitive to place multiple systems administrators, versed in the various operating systems, at each site.

This is precisely the kind of environment where AdminCenter should be cost-effective. The product supports a "process-oriented approach" to centralizing and automating the configuration of UNIX systems and servers, users/



## HP has beat IBM to the gate when it comes to user administration in heterogeneous (including non-IBM) environments.

passwords, filesystems and software.

AdminCenter is process-oriented because it gives the customer a single, unified interface to the process of configuration across a potentially diverse set of entities — including devices, software, systems, subsystems and users. As a result, HP customers will not need to deploy a different procedure for configuring each individual type of managed object in the environment of networked systems.

The ability to provide a consistent look-and-feel across a diverse set of management products has been a major selling point of the entire HP OpenView/OperationsCenter product suite. The new AdminCenter product will reinforce that competitive advantage for HP.

How well does AdminCenter stack up

to the competition? HP's product is similar in nature to Tivoli's Admin, a policy-based user administration and security tool that takes advantage of Tivoli's object-oriented framework. Tivoli/Admin has been out for well over a year, but HP will have the advantage of offering HP AdminCenter as part of a broader suite of network and systems management solutions. While Tivoli's Enterprise Console directly competes with HP OperationsCenter and Tivoli/Sentry provides some level of performance analysis, HP PerfView and the associated PCS and GlancePlus products are considered by many to be tops in UNIX performance analysis.

And what about IBM? We've been hearing for sometime that IBM will be rolling out a suite of object-oriented net-

work and systems management applications for mainframe, AIX, OS/2 and NetWare environments. However, timing is everything and HP has beat IBM to the gate when it comes to user administration in heterogeneous (including non-IBM) environments. IBM also lacks a message consolidation product similar to OperationsCenter for the UNIX environment.

Today, the level of integration between the various HP systems and network management tools is only skin-deep overall. However, that's still an improvement over what most customers must deal with today — lots of different end-user interfaces to lots of disparate products. But, according to HP, Dolphin will enable new levels of integration between HP OpenView product family members, as well as third-party applications.

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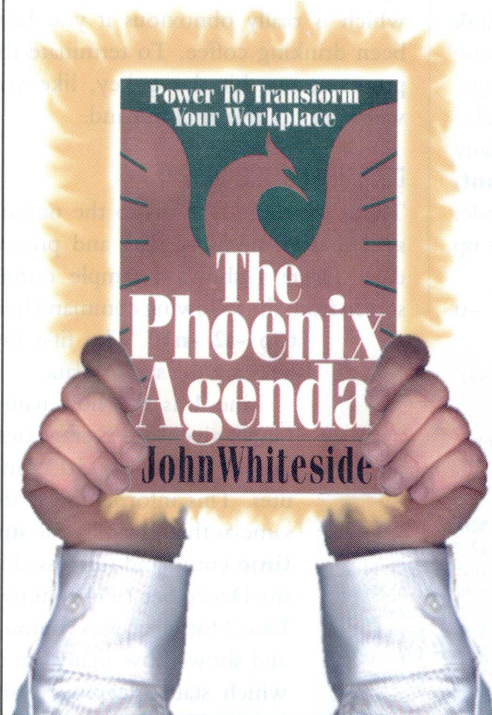
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# Sticking To The Top-ic

The **top** command is this month's top-ic. I found it while at a customer

site when I saw someone run it during a class (thanks, Paula). This was after I wrote the last column dealing with some scripts for looking at processes. So I hope this is a good followup.

**Top** stands for "top processes." It will display a periodically updated list of processes running on the system, and rank them from highest percentage of raw CPU utilization to lowest CPU usage. There are options for period of delay between updates: (**-snumber**); how many times to perform and update: (**-dcount**) then exit; and run in CPU hog mode: (**-q**) — when the system can't keep up with the analysis tool itself.

Options to speed it up include: **-u**

(UID), which prevents the system from translating UID to user name; and **-nnumber** which only displays **number** processes per screen. The **-n** option implies that there may be multiple screens, and you will need some screen control commands.

You emacs bigots will hate this, but the screen control commands are similar to the vi editors. Once **top** is running, **j** (up) shows the previous screen, and **k** (down) shows the next screen. **t** is a quick way to get back to the first (top) screen, and the highest CPU hogs. The problem with the screen control commands, is that they don't take effect until the next screen update, which is 5 seconds by default, which is really obnoxious if you have been drinking coffee. To terminate the program, just hit the **q** key, like you would in the **more** command.

## DECIPHERING THE OUTPUT

There are three sections to the output: system data, memory data and process data. Figure 1 shows a sample output screen from the following command line:

**top -s2 -n10.** The first five lines are the system data.

Line 1 is the host name. Line 2 gives load average over the last one, five and 15 minutes. This information is the same as that given by the **uptime** command (discussed in my December 1994 column). Line 3 lists processes running, and shows how many are in which state (sleeping, waiting, running, starting, zombie and stopped). Note: if a user

FIGURE 1

```
System: swift Thu Nov 17 22:25:24 1994
Load averages: 1.80, 1.11, 0.65
62 processes: 60 sleeping, 2 waiting, 2 running
Cpu states: 74.5% user, 0.0% nice, 6.6% system, 18.9% idle, 0.0% unk5,
0.0% unk6, 0.0% unk7, 0.0% unk8
Memory: 11932K (10192K) real, 23976K (14000K) virtual, 412K free Screen # 1/7
```

TTY	PID	USERNAME	PRI	NI	SIZE	RES	STATE	TIME	%WCPU	%CPU	COMMAND
?	1009	fredm	209	20	6124K	1720K	wait	0:05	28.15	17.26	/opt/lotus
?	220	daemon	154	20	6520K	3836K	sleep	3:57	10.90	10.88	/usr/bin/X
?	1057	fredm	154	20	324K	272K	sleep	0:01	33.26	8.62	/opt/lotus
?	264	fredm	154	20	5216K	924K	sleep	0:16	3.32	3.32	vuewm
?	516	fredm	154	20	4672K	532K	sleep	1:36	3.10	3.09	hpterm
p2	1005	fredm	180	20	292K	224K	wait	0:00	3.53	2.35	top -s1 -n
?	272	fredm	154	20	4792K	564K	sleep	0:25	1.13	1.12	hpterm
p0	310	fredm	154	20	4816K	580K	sleep	0:39	0.57	0.56	/usr/vue/b
?	111	root	154	20	228K	72K	sleep	0:05	0.80	0.52	/usr/etc/y
?	810	fredm	154	20	4604K	0K	sleep	0:00	0.49	0.49	/usr/vue/b



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**CIRCLE 143 ON READER CARD**



does a CTRL-Z and stops a process, it is listed as running, not stopped.

Lines 4 and 5 show CPU state information. This line details what percentage of time is spent in each of the processor states (user, nice, system and idle). I do not have any multiprocessor machines, but the man page says it would be per processor. This can be important in determining why a machine is dogging it.

Figure 2 has some samples of this line when various loads were put on the system. I like to use very simple tests when experimenting with any performance tool, because I can decide where the test will put the load, then be sure the tool proves the desired result. Then I can apply known symptoms to an unknown problem. Here are the commands that were applied to get the results in Figure 2. Use the numbers to pair them up.

**FIGURE 2**

```
1 Cpu states: 57.8% user, 42.2% system, 0.0% idle
2 Cpu states: 70.8% user, 29.2% system, 0.0% idle
3 Cpu states: 74.5% user, 6.6% system, 18.9% idle
4 Cpu states: 26.2% user, 73.8% system, 0.0% idle
5 Cpu states: 4.9% user, 1.0% system, 94.2% idle
```

## A WORM BY ANY OTHER NAME

I recently attended a meeting for all the UKW (Underwater Knoters of Worms) of the southeast portion of the western section of Corpus Christi, Texas. There were well over 300 knoters there. And with all the practicing going on (it was a bad day for worms) it took a while for the speaker at the aqua-podium to get everyone's attention. When everyone finally surfaced, stopped blowing bubbles and generally quieted down, the speech began. But very quickly everyone began fidgeting once again. Soon almost everyone was back to trickily twisting worms, totally ignoring the speaker.

How was I to know that the UKW (United Kingdom Workstation) group was meeting in the conference room — **and not in the pool room?**

It doesn't feel that good to be talking when no one's listening (stick with me, there is a point to all this.) But there was nothing wrong with my speech. The problem was a mismatch between the audience and speaker. But, I know of one place where there will not be a mismatch between a speaker and audience. And just to be sure, I would like to meet all of you who read this column at the InterWorks Annual Conference scheduled to held on on May 7, 1995 in Phoenix, Ariz.

InterWorks is for the technical HP-UX audience. If you are a HP-UX programmer, system administrator, network manager or other technical sort, then this conference is for you. There will be 56 hours of user and HP presentations, 24 hours of tutorials (including two-hour how-to's), a technical lab area for communing with the engineers that develop or support the HP products that you use, love or curse.

It also is a chance to meet the HP Response Center people face-to-face, give your feedback and suggestions to HP through the Engineering Investments session, and way more good stuff than my editor will let me list here. But most importantly, this is a place to go and meet your peers in the industry, and hear presentations that are planned, and written by the right speakers, for you, the right audience. —FM

The screen control  
commands don't take effect  
until the next screen update,  
5 seconds by default, which  
is obnoxious if you've been  
drinking coffee.

1. while true;do cat textfile;done
2. same as above, also Lotus Ami Pro startup
3. just Lotus Ami Pro during startup
4. while true;do cat textfile>/dev/null;done
5. same as 4, but during extreme network load

### SO WHAT'S HAPPENING?

Some interesting things are happening here. In test 1, we were fairly balanced between system and user process time. We were

passing a lot of data from the disk (then memory, after the file became resident and static) to the process to the tty to X windows. The two top processes were X and the HPterm, not the korn shell — it was way down the list. This should imply the bottleneck was displaying the data, not getting it. Indeed if you look at test 4, the user time drops dramatically, the load is on system processes, as we were displaying no data. The top process in this case was the korn shell.

Test 2 shows a combined effort of starting the Ami Pro word processor (it is an effort) and still doing the **while** loop **cat** command. Looking at test 3, which was just Ami Pro, we can see much higher user time, as the files needed had already been read, we were building internal tables, and some temporary files to prepare for editing files. In test 2, X was the top process, and Ami Pro was in test 3.

Test 5 was to show a poorly responding process (due to network problems, and accessing a remote host), but were a user to use another window/application, response would have been good. The process that was acting slow was actually the 8th top process in this case, and the system was mostly idle.

The next section of output in Figure 1 is the memory data. Listed is real and virtual memory in use, with active amounts in parentheses. If the amount of memory in use never approaches that physically in the machine, you are not memory bound — just busy. Figure 1 shows a machine with 32 MB of memory in use, never exceeding 12 MB.

The last section of output in Figure 1 is the process data. Here is the listing of processes in order, with percentage of CPU time usage. Much of the output data is the same as given with the **-l** option to **ps**. I am not sure of the algorithm used to get the weighted CPU time versus raw CPU time. Where the process is not bound by any type of I/O, the weighted value appears to go up. If you know, please enlighten me.

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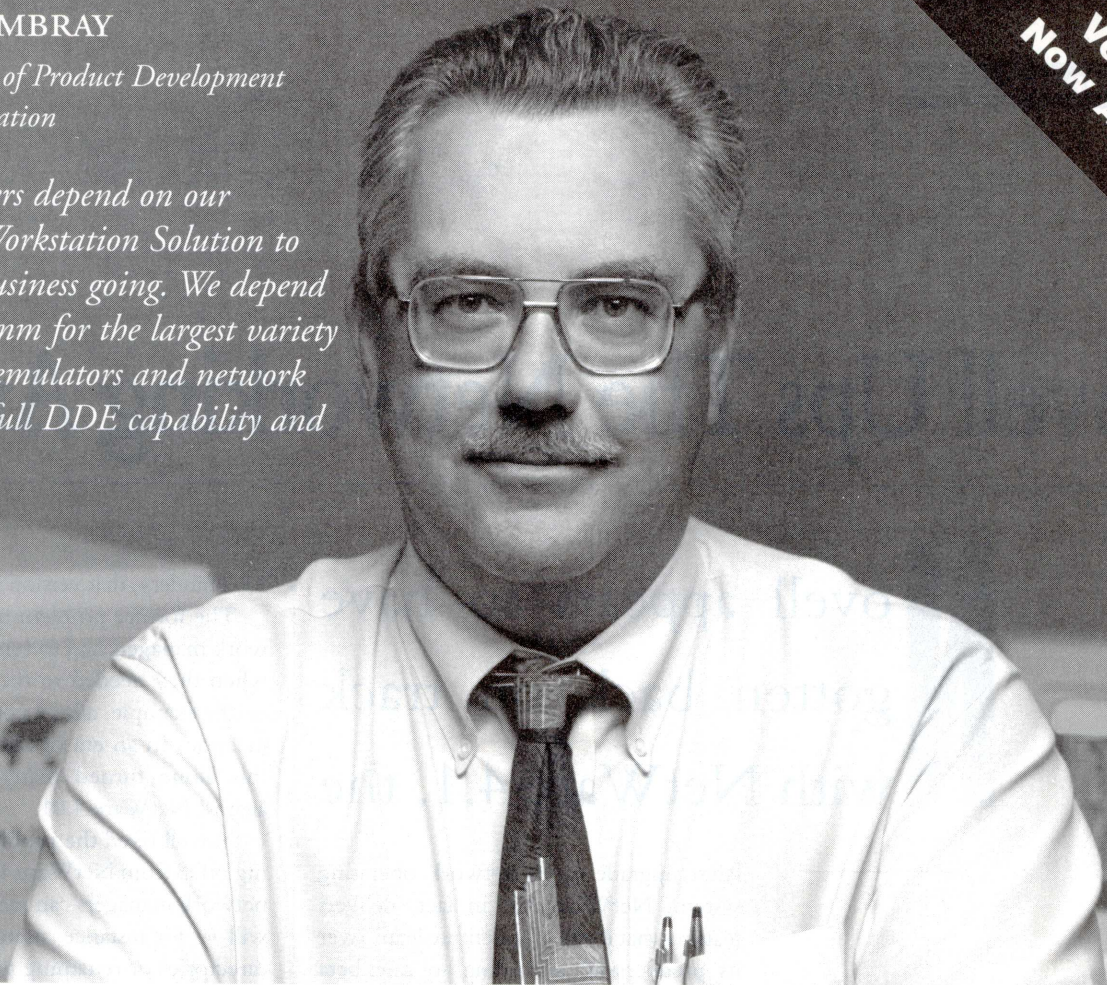


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# Novell Ups The Networking Ante

**N**ovell appears to have gotten back on track with NetWare 4.1, the

latest upgrade to its network operating system. NetWare 4.1, in fact, delivers features that make it "a definite leap" over its predecessor, according to one beta tester.

For starters, Novell (Provo, Utah) has made NetWare 4.1's NetWare Directory Services (NDS) more flexible and easier to manage. Just as importantly, Novell has lowered NetWare 4.1's prices and switched to "additive" pricing, letting end users buy various multiuser licenses, such as five- and 100-user packages, and consolidate them into odd-lot bundles.

Novell also filled in a number of other gaps that left NetWare 4.01 incomplete. These include tools to migrate from 3.x, integrated TCP/IP, E-mail and Macintosh support, a more efficient wide area routing protocol called NetWare Link Service Protocol (NLSP), and easier NetWare 4.1 installation.

## OVERCOMING RESISTANCE

The key factor in end-user resistance to NetWare 4.01 was NDS, a global database of end users similar to Banyan's Street Talk. Novell's first try at NDS had two major flaws: It didn't allow rebuilding of the name-service directory once it was created and it lacked the ability to emulate NetWare

3.x's bindery, that version's user database.

The former problem meant that network managers had to reinstall NetWare when they needed to reconfigure NDS — for example, after a company reorganization. In an era of continual change, this alone turned many organizations against NetWare 4.01.

Novell fixed the problem by separating NDS from NetWare 4.1's core. Now network managers can rearrange NDS at will — for instance, merging two NDS directories or renaming them.

Without the ability to emulate NetWare 3.x's bindery, NetWare 4.01 required managing NetWare 4.x and 3.x servers separately, essentially eliminating the benefits of a global database. Novell corrected this by adding a NetSync bindery-emulation utility to 4.1. NetSync synchronizes as many as 12 bindery-based servers to a single NetWare 4.1 directory, giving network managers a single point of administration for both types of NetWare servers.

## MAKING NETWARE MORE AFFORDABLE

Although specific details weren't available at this writing, Novell was expected to price NetWare 4.1 at 25 percent less than 4.02, making it the same as NetWare 3.1. That means a 100-user license — Novell now says it's selling licenses per connection, not user — would cost \$6,995.

In addition, NetWare for Mac, Novell's Message Handling Service (MHS), TCP/IP and System Fault Tolerance (SFT) III, separately priced products with 3.11, are now integrated into NetWare 4.1. With NetWare for Mac,

### Editor's Note:

*HP Professional welcomes Jim Carr as its new Networking PCs columnist. Carr is a Saratoga, California-based freelance writer who has worked in and covered the networking industry for nearly a decade. He's formerly an executive editor at LAN Magazine and a senior editor at Data Communications Magazine.*



the integration not only saves companies the \$995 per five-user license, it makes Macs full NetWare clients, with the Mac version of Novell's Internetwork Packet Exchange (IPX) and Mac NDS services integrated into 4.1.

The other enhancements in NetWare 4.1 make it more cost-effective and boost performance in large networks. NLSP, for example, cuts internetwork traffic dramatically, says beta tester David Blake, an engineer at HP's printer division (Boise, Idaho).

NLSP replaces the Routing Information (RIP) and Service Advertising protocols (SAP) which generate considerable internetwork traffic and lead to unnecessarily high communications costs. By reducing broadcast traffic, says Blake, NLSP delivers greater throughput on existing communications circuits.

#### IT'S SUPERNOS

All in all, Novell has positioned NetWare 4.1 as a worthy enterprise-network oppo-

nent for Microsoft Corp.'s (Redmond, Wash.) Windows NT 3.5 server and Banyan Systems' (Westborough, Mass.) VINES. And there's no understating the critical importance of 4.1. It's vital to Novell's future in the NOS marketplace, for two reasons.

First, market research indicates Windows NT and VINES have cut significantly into Novell's market dominance since the release of NetWare 4.0 two years ago. Novell needs to regain marketplace momentum, and its customers' confidence, with a strong product.

Second, NetWare 4.1 is the first step in what Novell calls its "SuperNOS." Novell positions SuperNOS, an eventual melding of NetWare and Novell's UNIX, as the all-in-one enterprise network solution.

SuperNOS will become what Novell CEO Bob Frankenberg calls a "single image" of NetWare and Novell's UNIX. This merged environment would allow organizations to run all of their applica-

tions — DOS, Windows and UNIX — on a single hardware platform, an especially appealing feature.

This pits it directly against the Windows NT 3.5 server and BackOffice, the integrated "information system" package that teams NT, Microsoft's SQL, Mail, SNA and Systems Management servers. With BackOffice, Microsoft also hopes to offer customers an all-inclusive solution.

Whether Novell, or Banyan for that matter, can outlast giant Microsoft in the server marketplace remains unclear. Only time, and customer acceptance, will answer that question.

But Microsoft isn't assured of instant success in the networking market by any means. Those who remember the Microsoft-3Com LAN Manager fiasco can attest that Microsoft is more than willing to drop products it perceives as dead.

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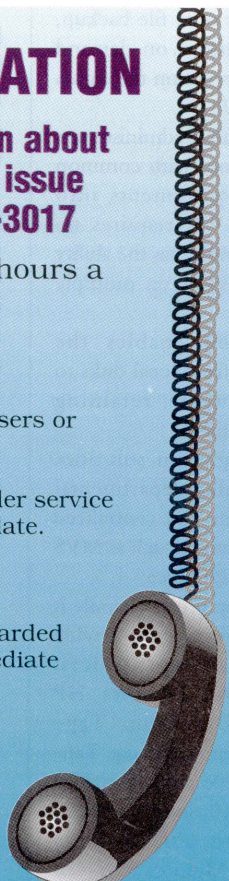
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# **new** Products

## SOFTWARE

### **OpenV\*NetBackup Ensures Data Integrity**

OpenVision announced OpenV\*NetBackup 1.7, which introduces comprehensive online backup capabilities to Oracle 7 databases.

The Database Extension makes it possible to back up, archive and defragment live relational Oracle databases across the network. A flexible scheduling facility fully automates the backup process. From a single management server, OpenV\*NetBackup enables administrators to schedule lights out and enterprise-wide backups, while allowing end users to perform their own file backup, archive and restore operations on demand without administrator intervention through a simple point-and-click GUI.

OpenV\*NetBackup enables administrators to categorize client machines with common backup and archive requirements into powerful "client classes." It requires no dedicated storage devices and it has the ability to back up to storage devices on multiple servers.

The HSM Extension enables the migration of desktop files from local disks to departmental servers while retaining immediate access to those files.

The disk-to-disk migration solution, Enterprise Extension, links departmental servers with remote servers and centralized storage management applications such as MVS DF/HSM, Cray DFS and UniTree.

The OpenV\*NetBackup product family is augmented by software supporting a wide range of robotic mass storage devices, including: HP Optical Disk Libraries, HP 4mm DAT Drives, IBM 8mm Tape Carousels, Lago Systems 8mm Cartridge Tape Datawheels, Exabyte 10i/10e 8mm Cartridge Tape Stackers, Exabyte 210 8mm Cartridge Tape Stackers, Exabyte 60/120 8mm Cartridge Tape Libraries, Metrum RSS-48b and RSS-600b VHS Tape Libraries, StorageTek Automated Cartridge Systems,

ADIC 4mm DAT Autochargers and ADIC 4mm Virtual Library Systems.

Platforms supported include: SunOS 4.1.3 and Solaris 2.3, HP-UX 9.0, IBM AIX 3.2.4, IRIX 5.2 and EP/IX 2.1.

The OpenV\*NetBackup server costs \$5,500, while its agents start at \$300 each. The Database Extension is \$1,000, the HSM Extension is \$20,000 with its agents priced at \$2,000 and the Enterprise Extension is \$10,000.

Contact OpenVision, 7133 Koll Center Pkwy., Pleasanton, CA 94583; (510) 426-6400.

*Circle 400 on reader card*

### **Minisoft Releases NetPrint92 V2.0**

Minisoft announces the release of version 2.0 of NetPrint92, its networking printing software for HP 3000 and UNIX platforms.

New features include: character set translation; optimized code for reduced CPU consumption (MPE); an improved BOOTP utility with support of subnet mask and default gateway values, in addition to IP addresses; the ability to use device numbers as well as device classes in UNIX-to-MPE routing; a set of commands for controlling individual network printers from an online session; SUSPEND, RESUME, DELETE spoolfiles that are being printed (or waiting to be printed) on a LAN-based device; and support of Novell NetWare version 4.xx environment.

Minisoft Inc., 13617 State Hwy. 9, Snohomish, WA 98290; (206) 668-5187.

*Circle 398 on reader card*

### **Cambar Software Announces Client/Server Warehousing**

Cambar Software announced the Client/Server Warehousing (CSW) software system for the HP 9000 platform. CSW provides a complete solution for automating all major manual warehouse functions on a client-server framework that makes it possible for



# Does Adager charge you a fortune when you upgrade your HP3000



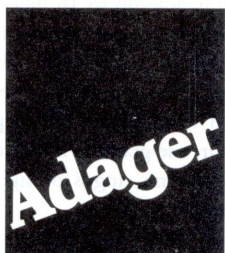
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This is Adager's policy on MPE XL and MPE/iX, in effect since 1987:

- If you have an Adager license on a Classic machine and you just get an MPE/iX machine as an exchange, there is no Adager upgrade fee at all.
- If you have an Adager license on a Spectrum machine and you simply upgrade your CPU, there is no Adager upgrade fee at all.
- If you have an Adager license on a Classic machine and you get an additional computer that happens to be an MPE/iX machine, you simply pay the Adager fee for the additional machine.

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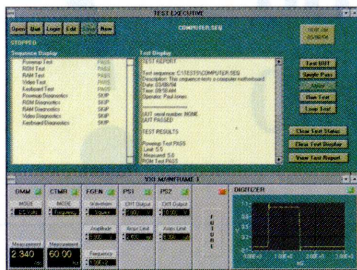
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CSW is available in configurations that include HP 9000 UNIX workstations, IBM 486 PCs, AS/400 midrange or ES/9000 mainframes as data servers. Clients can be IBM 486 PCs or RF devices from a variety of vendors. Prices range from \$150,000 to \$300,000, depending on configuration and customization.

Contact Cambar Software, 4975 LaCross Rd., Charleston, SC 29406; (803) 747-4900.

*Circle 397 on reader card*

## Bridgeway Releases EventIX Version 2.0

Bridgeway announced EventIX Version 2.0, a network management solution that bridges the gap between legacy and SNMP systems.

EventIX provides a set of tools and applications for event processing (recognition, filtering and correlation) and task automation. It includes a development toolkit, network interfaces and off-the-shelf applications that can be used "as-is" or custom fit with minimal work and expense.

Enhancements include: a Bubble interface which is an easy-to-use GUI for developing, debugging and implementing EventIX applications; SNMPv2 support; an improved NetView interface; enhanced data handling utilities; Sybase database management; and an application catalog.

Contact Bridgeway Corp., Jefferson Office Park, Ste. 300, 800 Turnpike St., North Andover, MA 01845; (508) 683-3626.

*Circle 394 on reader card*

## PATROLINK Integrates Management Tools

BMC Software announced the availability of PATROLINK, a family of integration products for PATROL, which allows the application management functionality of

PATROL to be incorporated into many network management systems.

The family includes PATROLINK for HP OpenView, IBM NetView for AIX, Sun NetManager and POLYCENTER Manager on NetView.

PATROLINK enables system administrators to remain aware of the overall status of all applications, even when focused on the network, by incorporating PATROL's database and systems monitoring and application management capabilities into a network console.

When PATROL detects a problem, a SNMP trap is sent, regardless of whether PATROL is displayed, causing the representative icon on the network management console to flash. From there, PATROL can either notify the administrator of the problem or automatically execute the recovery action required to resolve the problem.

Price per copy is \$2,000.

Contact BMC Software Inc., 2101 CityWest Blvd., Houston, TX 77042; (713) 918-8800.

*Circle 393 on reader card*

## STR Offers FAX/3000 And Faxcom Enterprise

STR announced FAX/3000, a completely automated unattended system providing fax communication directly from an HP 3000. FAX/3000 includes software that resides on the HP 3000 and a fax server that connects through an HP 3000 serial port.

FAX/3000 can take data from: an MPE spooler; a programmatic interfacier; an interactive dialogue; E-mail (HPDesk, PostHaste); or PCs connected to the HP (WordPerfect, Lotus). FAX/3000 can fax the data and include PCL output, or it can integrate with graphics.

STR also announced Faxcom Enterprise, a strategy that provides companies with a comprehensive solution for managing all inbound and outbound fax traffic. Faxcom Enterprise combines the power of FAX/3000 with complete faxing capability on a LAN and other host computers. Faxcom Enterprises can handle up to 16 inbound or outbound simultaneous transmissions. Options are available enabling the Faxcom Enterprise to route incoming faxes directly to LAN users and to emulate PostScript and PCL formats. Or, use graphics integration to overlay business forms, logos or signatures into documents.

Contact STR, 3133 Briarwood Lane, Midlothian, VA 23113; (804) 272-723.

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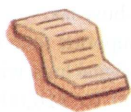


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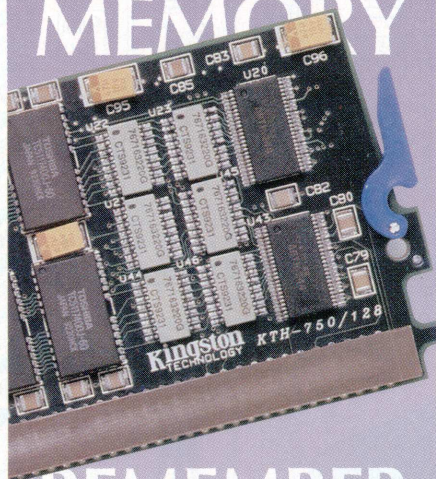


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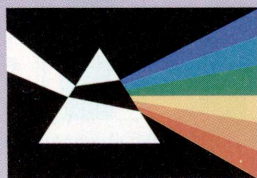


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## Magic Software For The HP Releases SortMagic/FIA

Magic Software for the HP announced the release of SortMagic/Fast Image Access (FIA) high-speed, programmatic access for IMAGE datasets.

SortMagic/FIA does not require changes to source code or existing programs. Simply including an XL when running programs improves performance up to four times when serially accessing IMAGE detail or master datasets. Both CPU and elapsed times are reduced.

Contact Magic Software for the HP, 4786 S. Olathe Way, Aurora, CO 80015; (303) 766-3222.

*Circle 390 on reader card*

## Adager Console Manages HP Databases

Adager Corp. released the Adager Console, a client-server cooperative system which monitors and manages IMAGE/SQL and TurboIMAGE databases, as well as their disk resources, on any HP 3000 system.

This Windows PC client links to Adager — a database adapter/manager for IMAGE, TurboIMAGE and IMAGE/SQL databases — on the HP 3000 server. Adager's Console keeps tight control of all databases' dataset capacities, to prevent running out of free entries during a work day.

It also determines the rate at which free disk space is disappearing. If the trend looks worrisome, database administrators get warning messages on the HP 3000 system console.

Adager's Console allows you to set up rules and exceptions, so administrators can schedule Adager maintenance tasks while preventing conflicts with production. Once the rules are defined, Adager's Console quietly monitors databases, scheduling the appropriate background Adager tasks to keep IMAGE/SQL databases in tune.

Contact Adager, The Adager Way, Sun Valley, ID 83353; (208) 726-9100.

*Circle 389 on reader card*

## CSI Provides ISAMATION For RM/COBOL-85 Files

CSI released ISAMATION for RM/COBOL-85 indexed files. ISAMATION quickly rebuilds indexed files in place. No additional disk space is required. ISAMATION is used to rebuild corrupted indexes files and for normal compression of indexed files to improve system performance.

ISAMATION is currently available on machines running HP-UX, AIX, SCO UNIX and TI1500 operating systems. Price is under \$1,000.

Contact Computer Solutions Inc., 120 E. Marks St., #225, Orlando, FL 32803; (407) 649-0123.

*Circle 388 on reader card*

## HARDWARE

### Plaintree Systems Debuts 8-Port Ethernet Switch

Plaintree Systems introduced the WaveSwitch 80, a standalone eight-port Ethernet Switch that integrates with 10 Mbps Ethernet ports with 100 Mbps FDDI or 100 Mbps Fast Ethernet. The WaveSwitch 80 brings Ethernet switching technology to users of smaller workgroups.

WaveSwitch provides each desktop or small workgroup with a dedicated 10 Mbps Ethernet. It requires no reconfiguration and installation is generally accomplished in less than one hour.

WaveSwitch 80 is fully compliant with the IEEE 802.1d transparent bridging standard and the SNMP MIB II and the RFC 1493 Bridge MIB. Front panel LEDs monitor and display status and operation of each port.

The eight-port WaveSwitch costs \$6,495. With Fast Ethernet, it costs \$7,995. With Single attached FDDI, it costs \$8,995. And with dual-attached FDDI, it costs \$9,995. Contact Plaintree Systems, Seventy Walnut St., Wellesley, MA 02181; (617) 239-8077.

*Circle 384 on reader card*

### SoftLinx Offers Replix FaxCenter

SoftLinx announced Replix FaxCenter, a complete line of enhanced fax solutions based on a plug-and-play turnkey hardware platform.

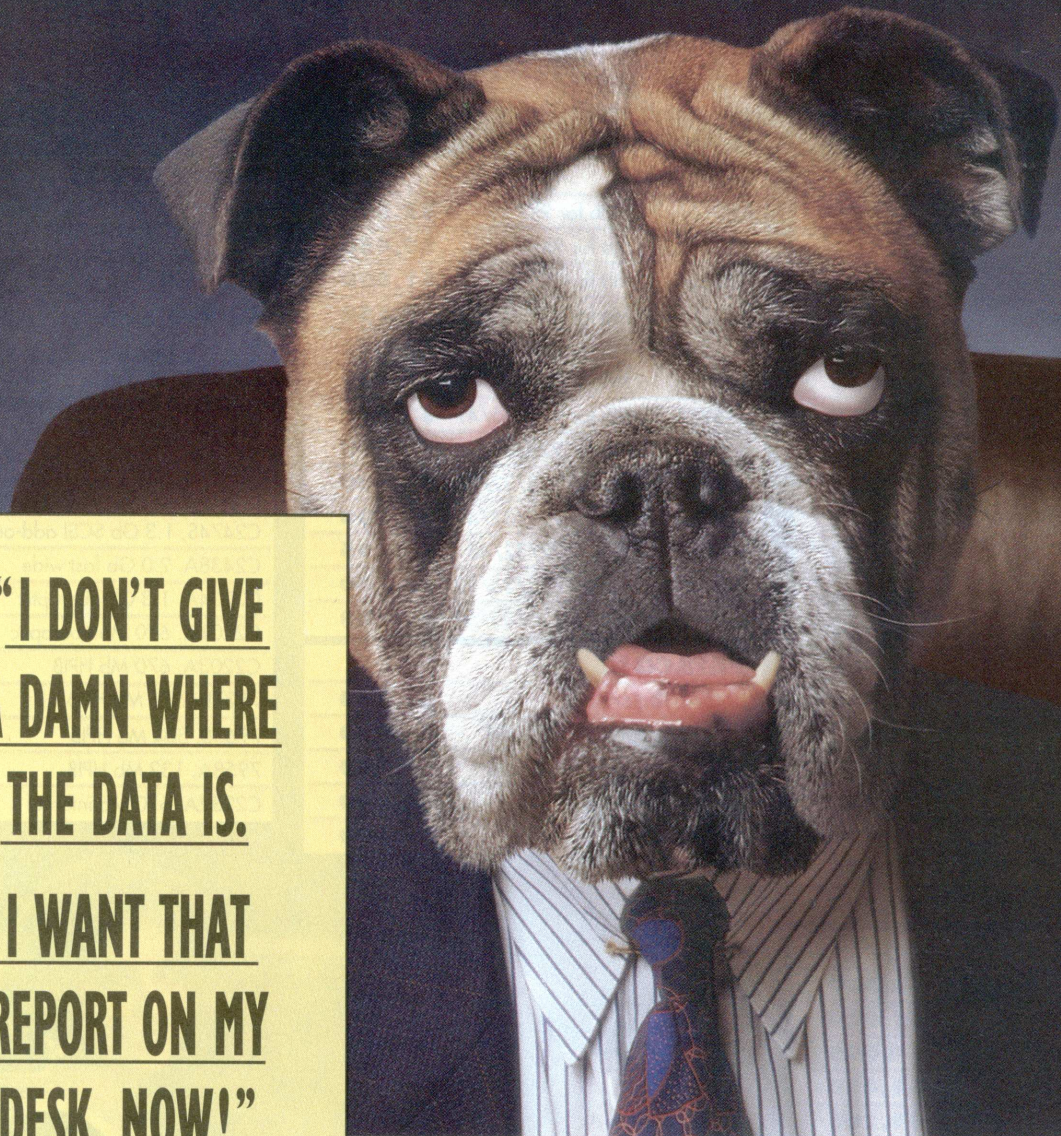
The Replix FaxCenter series features a highly scalable platform based on Intel architecture running industry standard UNIX SVR4.2. The systems incorporate multi-channel DSP-based fax/voice boards from Brooktrout Technologies Inc., permitting high density configurations for analog loop-start or digital lines.

It includes network fax, fax-on-demand, fax broadcasting, fax/voice mailboxes, fax store-and-forward and never-busy fax.

Replix FaxCenter 1000 supports four to 16 analog lines or eight to 24 digital lines with prices ranging from \$12,000 to \$16,000, depending on software configuration. Replix FaxCenter 5000 support 16 lines and up. Contact SoftLinx, 234 Littleton Rd., Westford, MA 01886; (508) 392-0001.

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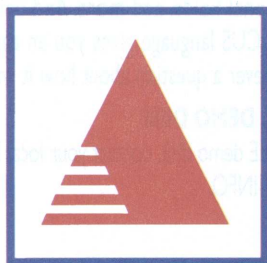
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## Megahertz Introduces Ethernet\*Modem Card

Megahertz announced its PCMCIA Ethernet-modem combination card which combines 14.4 Kbps fax modem and 10BaseT Ethernet adapter technology.

Megahertz's Ethernet\*Modem is capable of simultaneous fax/modem and Ethernet connections. It will connect mobile computing users to all popular networking systems (Novell NetWare, Banyan Vines, Windows for Workgroups, Windows NT Server, Artisoft LANtastic, Microsoft LAN Manager, IBM LAN Server and HP LAN Manager), and will include DOS ODI and DOS NDIS drivers.

Through an intuitive, menu-driven software, the product can be installed and configured within minutes. The program automatically configures the mobile computer for optimum use of the combination card. It also provides a hot insertion capability, allowing the user to insert or remove the Ethernet\*Modem without rebooting the computer.

Contact Megahertz, 605 N. 5600 W., P.O.

Box 16020, Salt Lake City, UT 84116; (801) 320-7000.

*Circle 382 on reader card*

## API International Announces Unispool

API International announced that Unispool, a print management software system, is now available for companies deploying Microsoft Windows NT servers and clients.

In addition to Windows NT, Unispool interoperates with HP, IBM, DEC and Sun Systems, as well as Novell, SCO UNIX and other PCs, plus UNIX workstations and servers. Unispool also includes a NLM to link Novell servers. The Unispool NLM eliminates the need to set up a Novell gateway PC between NetWare print servers.

Unispool re-routes print files automatically around failed or jammed printers, following an organization's established business processes. It will bridge networks and systems to reach alternate devices and automatically archives print jobs, to ensure availability of mission-critical documents such as invoices or payables checks.

The Unispool Control Language automates print file management, and managers can use the language's profiles to solve communications problems. A Network Spooling Module transfers print files to more than 120 systems on TCP/IP or X.25 networks.

Other features include: a Spoolfile Management unit; Local Spooling; Novell and LAN Manager modules; a Distribution module; an XPORT module; and a Jobsaver Module for HP 3000s.

Contact API International, P.O. box 91027, Austin, TX 78709; (512) 280-4391.

*Circle 381 on reader card*

## Telebyte Provides Model 277 FlexMode

Telebyte Technology Inc. announced the Model 277 FlexMode Fiber-Optic Modem, an asynchronous fiber-optic modem whose optical interface operates in point-to-point or ring (daisy-chain) configurations and whose electrical interface operates in point-to-point or multidrop configurations depending on the user selected interface.

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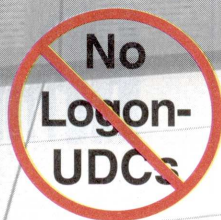
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The Model 277 electrical interface is switch selectable between RS-232, RS-422 and RS-485. Different 277s on a ring or point-to-point configuration can be set for different electrical interfaces thus providing interface conversion.

Verification of operation is assisted via front panel LEDs for local transmission data, fiber transmission data, receive data and collision.

Price is \$285 per Model 277.

Contact Telebyte, 270 Pulaski Rd., Greelawn, NY 11740; (516) 423-3232.

*Circle 380 on reader card*

### Transition Engineering Offers StackMaster Bridge Module

Transition Engineering announced that an integrated Bridge Module is available for the StackMaster, a stackable, manageable hub. The Bridge Slide-In-Module is a two-port bridge connecting a workgroup or department to a backbone network. It fits in the Slide-In-Card slot in the back of the unit. The bridge module also can be used with other Transition Engineering products including the Multi-Media Repeater and the 24-port, unmanaged 10BaseT Hub.

The bridge performs wire rate filtering and forwarding of up to 14,880 packets per second with less than 14 microsecond delay. An integrated 32 KB packet buffers messages in both directions.

The Bridge Module automatically learns up to 256 addresses on the workgroup side and supports any number of devices on the network port. It is IEEE 802.3-compatible.

The modular StackMaster system supports two repeater modules per unit. Repeater modules support either eight 10BaseT or six 10BaseFL ports.

The Bridge Modules costs \$699. The modular StackMaster costs \$995 for a 16-port 10BaseT unit and \$695 for the optional Management Unit.

Contact Transition Engineering Inc., 7090 Shady Oak Rd., Eden Prairie, MN 55344; (612) 941-7600.

*Circle 379 on reader card*

### LANCAST Provides Translator Interface

LANCAST announced the 4368 "the twister" Translator Interface. The 4368 is a unique modular design that allows interconnection of thin, twisted-pair and fiber-optic segments within a single unit. The design allows a single chassis to house up to seven translator interface modules in any combination. Hot swappable modules provide a variety of connector combinations.

All signal activity, including collision data, is reliably translated assuring accurate communication and collision detection in any combination of connected segments or devices. The 4368 does not count as a repeater budget, which provides maximum flexibility to a new or existing network.

The 4368 is easily upgradeable by the user

because all connections are front accessible for ease of installation and maintenance.

Contact LANCAST, 10 Northern Blvd., Unit 5, Amherst, NH 03031; (603) 880-1833.

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# In Defense Of The Assault

From The Trenches, the AS/sault Looks Like A Winner



By Richard Essery

It was with a great deal of interest that I read the "Into The Valley" editorial in the November 1994 issue. I thought that I had inadvertently picked up my copy of *News 3X/400*, because there was a degree of negativity which I usually find in the "Pro IBM" magazines; but no, it was *HP Professional*.

I have worked with HP in Canada and the United States migrating IBM S/36 users, and can therefore attest that the HP AS/sault program is going to be a large thorn in the side of IBM.

With over six years in this market, I have seen thousands of unhappy S/38 and AS/400 users in North America. HP's "S/36 Strike" program that was conducted during the last two years is a common solution for many of these disgruntled 36ers. And, when a senior IBM Manager wishes to partner with me because "HP has been eating our lunch" in this market, you know it has affected IBM.

In response to the comments from the Aberdeen Group that the AS/400 has challenged HP, I believe that the AS/400 has not challenged HP. Rather, the AS/400 has challenged IBM's own RS/6000.

And the great myth that re-engineering an application is the equivalent of building the great pyramids of Giza is fading fast. Today, proprietary application re-engineering is facilitated through several automated tools. For example, a user can implement either an emulation tool or a true conversion tool and realize numerous benefits from both products. The end-user does not have to be retrained because the software still looks and feels the same, and the company also retains the past investment in their software.

Specifically, for those users who don't want to abandon the S/36, there is California Software's Baby 36 which allows programmers to use their PCs at the office, at home or at a client site to do development work, as well as allowing the company or other departments to use the present software on a PC-based system.

Users have the choice of a number of operating systems — DOS, Novell, OS/2 or NT. If the user

needs more storage or power, they have Baby 36 or Open RS/36 from Universal Software. Open RS/36 lets users port their environment to a UNIX platform like the HP 9000 with a direct link to an RDBMS like Oracle or Informix. For those S/36 users who want to migrate to "open systems" and have the need to bring the current software to a UNIX system, there is Liberate/36. This tool will convert and migrate all RPG, COBOL and OCL to flat files or a 4GL/RDBMS of your choice.

For the S/38 or AS/400 user, the choice is the same — emulation or conversion. California Software released their Baby/4XX Development tool in October 1992 and followed with the Runtime license in June 1993 for DOS, Novell, OS/2 and finally NT. Last month, they released version 1.6. With their new release comes Baby 4 UNIX, which supports all UNIX platforms including HP-UX and AIX.

To complete "the circle of change" for migration, there is "Making Progress" from EFA Software Services. EFA Software Services is a department within EFA that was started when the company needed to bring their Oil and Gas Exploration software from the AS/400 to an open systems environment. After re-engineering their software, they were approached by Alders UK, an organization that specializes in Duty Free shops at airports worldwide.

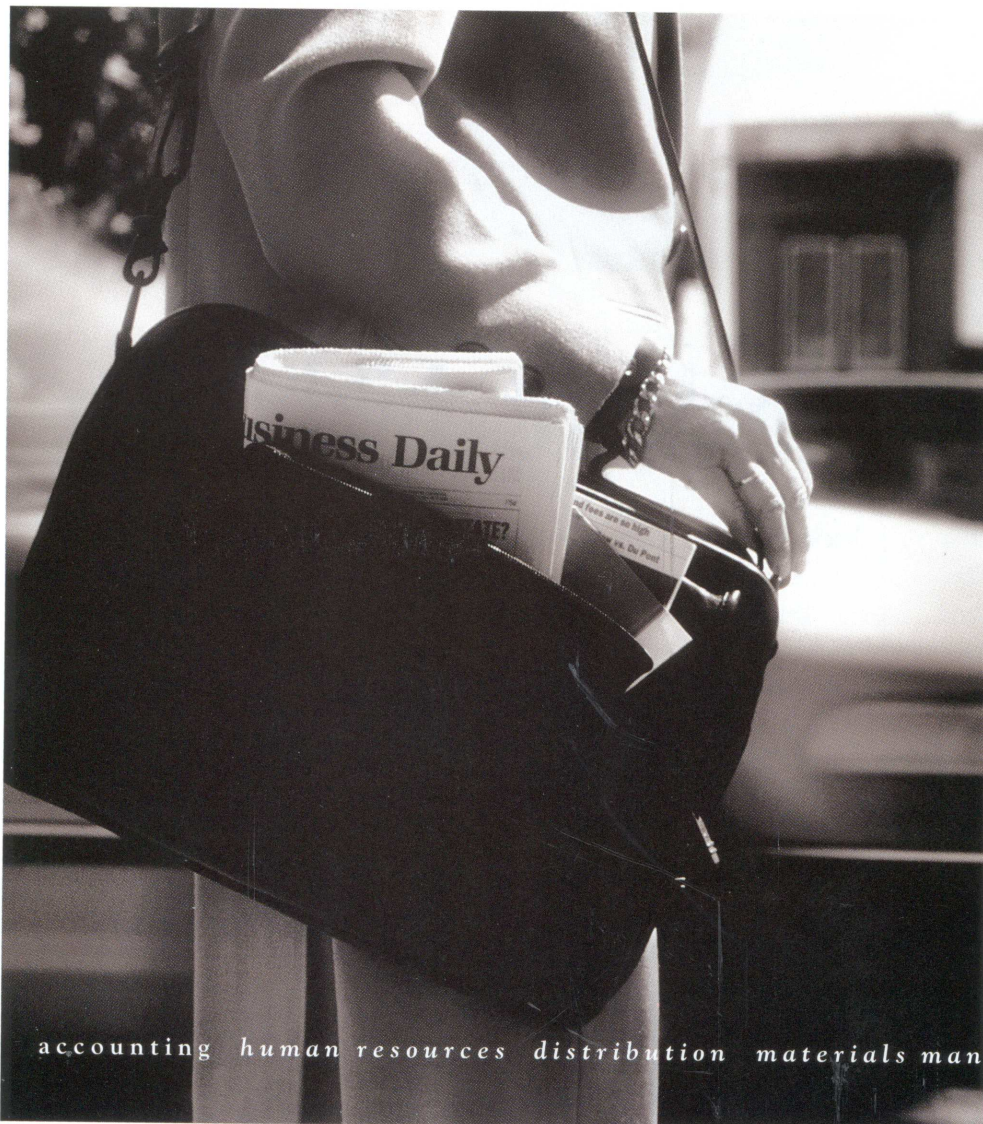
Initially, EFA converted all RPG, COBOL and CL into the Progress 4GL/RDBMS. And after being urged by people like myself, they now have numerous sites using the Oracle 4GL/RDBMS.

So, regardless of the reason — abandoning the 3X/400 platform, the need for additional storage or power, departmental systems or telecomputing — there is a market and there is a need for change. Open systems are here to stay. And HP will continue to be the open systems provider of the future.—*Richard M. Essery is the principal consultant at R.Y.E. Enterprises in Mississauga, Ontario, and an HP Professional reader.*



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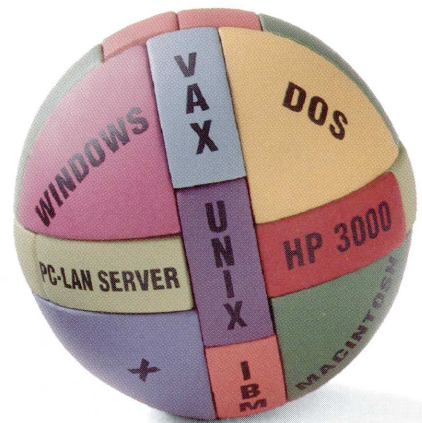
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